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SEPTEMBER 1988 VOL. 10 NO. 9

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AMERICAN

SURVIVAL.

THE MAGAZINE FOR SAFER LIVING

GUIDE

 **INSIDE SOVIET
STAR WARS**

**HOW TO:
CONFINEMENT
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FED ORD M14 RIFLE



**LAND
NAVIGATION:
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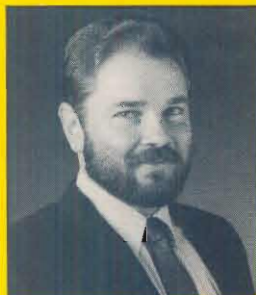


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Lynn C. Thompson

Lynn C. Thompson
PRESIDENT, COLD STEEL

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SEPTEMBER 1988/AMERICAN SURVIVAL GUIDE 3

AMERICAN SURVIVAL

THE MAGAZINE FOR SAFER LIVING GUIDE

SEPTEMBER 1988 VOLUME 10 NUMBER 9



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Knowing how to properly use map and compass can be vital when finding your way in the wilderness. See page 30 (Photo by Jim Benson). Inset: Fed Ord's M14SA rifle. See page 8.

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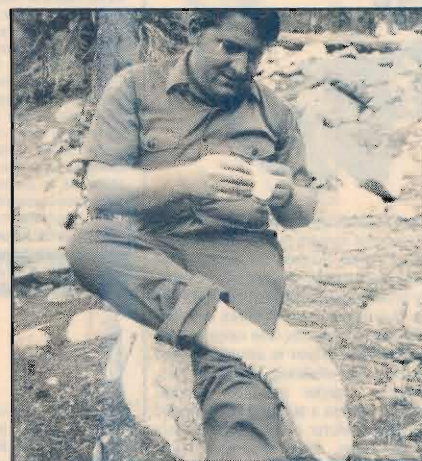
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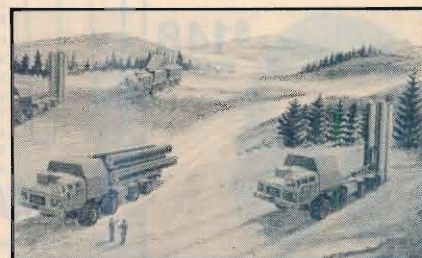
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SURVIVAL LINE

Weather warning networks for storms in U.S., government says no to home AIDS tests, Maryland to define, ban 'Saturday night specials'...

IF all goes as planned, within the next few years the entire continental U.S. will be monitored by hundreds of specialized radars and instruments in an effort to predict, monitor, and warn of outbreaks of severe storms and other dangerous weather-related phenomena.

The nationwide network will actually consist of a number of differing weather monitoring projects, most of which are already under construction. One project known as the "Next Generation Weather Radar" system and funded by the National Weather Service, the Department of Defense, and the Federal Aviation Administration, plans to erect 195 radar towers across the U.S. These geodesic-domed towers will house the latest in weather-tracking Doppler radars. Each will be electronically linked to a central forecasting center where their data will be converted to color video displays which will allow forecasters to more accurately predict tornadoes, flash floods, and other life-threatening weather phenomena. The NGWR is scheduled to be completed by 1995 at a cost of \$450 million.

Another project, the National Lightning Detection Network, NLDN, is already in operation across 75 percent of the U.S. The entire country should be covered by the end of this year. The control center for the NLDN is located in Albany, New York, and already has within its computers data on over 10 million lightning strikes. The system is designed to measure a number of factors for each lightning strike. Among them, polarity of the flash, number of surges in each flash, direction of current flow, electrical intensity, etc. As this data flows into the NLDN control center, computers create models of the storm and predict its intensity, duration, and direction of travel. That information is currently used by utility companies to dispatch emergency crews to areas likely to be hit by severe electrical storms. The system will soon be tied into the U.S. National Weather Service which will make the data avail-

able to local communities, pilots, farmers, etc.

Home AIDS Test — The Food and Drug Administration, FDA, in a recent decision has virtually ruled out the possibility of a home test kit designed to detect the AIDS virus. A number of manufacturers had recently petitioned the FDA to be allowed to begin test-marketing the kits, so as to be able to gather the research data necessary for FDA approval. The FDA ruled that the kits could only be tested in a hospital, clinic, or other qualified medical institution. The ruling means in effect that the marketers of the test kits will not be able to gather the data they would need for FDA approval.

FDA officials made no direct comment on their ruling. However in the past, FDA officials have cited two main factors against the approval of a home AIDS test kit. First, the mortality rate of the disease itself, and second, the opinion of most health care professionals and AIDS researchers that AIDS tests only be given in conjunction with proper counseling.

Maryland Gun Ban Fallout — Maryland recently enacted the first statewide ban of so called "Saturday night specials" in the U.S. The ban, which takes effect in 1990, would set up a board of nine examiners to determine which pistols would be outlawed in the state. Criteria the board would use in deciding whether to ban a particular weapon include concealability, accuracy, safety, and the general construction of the firearm.

Opponents of the new law say that it is so broadly worded that virtually any handgun could be banned by the board. They have begun a petition drive to put the new law to referendum on the November ballot. Spokesmen for the Maryland Committee Against the Gun Ban say they should have no trouble getting the 33,000 signatures needed to put the law to a vote.

On the other side, gun control groups see the Maryland law as a stepping-stone to similar laws in other states. ●

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TO THE POINT

Maintaining health in a polluted, stressful world...

THERE are many health threats in our modern world. We can develop a wide variety of diseases as a result of our lifestyles and workplace or other environmental exposure to hazardous substances and pollutants.

Cardiovascular disease, cancer, emphysema, rickets, hepatitis, anemia: these are just a few of the ailments you can develop during your lifetime resulting in poor health and death.

While the threats to your health are out there, by facing them and taking steps to protect yourself, you can improve the odds of avoiding or lessening the illness and bad health that might otherwise afflict you. Ill health puts you at a decided disadvantage when it comes to survival in emergency situations such as a nuclear accident, natural disaster or even an attack by an assailant. In all such situations you need to be healthy and fit to be able to cope successfully. So staying healthy is a survival priority. While it's not possible to foresee every threat in our lives, there is nevertheless much that we can do to reduce the risk of debilitating illnesses and health problems by having the proper nutrition, exercising regularly and maintaining the right attitudes in our daily living. In this space I want to focus on the importance of nutrition in improving and maintaining health.

The science of nutrition is a young and growing one and there is a great deal that is not known about how nutrition works. And there is often controversy and debate about what is known. Additionally, nutritional requirements vary tremendously from individual to individual based on hereditary, lifestyle, physiological and environmental factors.

The impact of stress on our bodies and the nutrients needed to better deal with stress is another aspect of health that cannot be overlooked in today's fast-paced, high-pressure world. There are different types of stress that affect us. There is the stress of work pressures, the stress of psychological and emotional conflicts with other people, and stress caused by disease and envi-

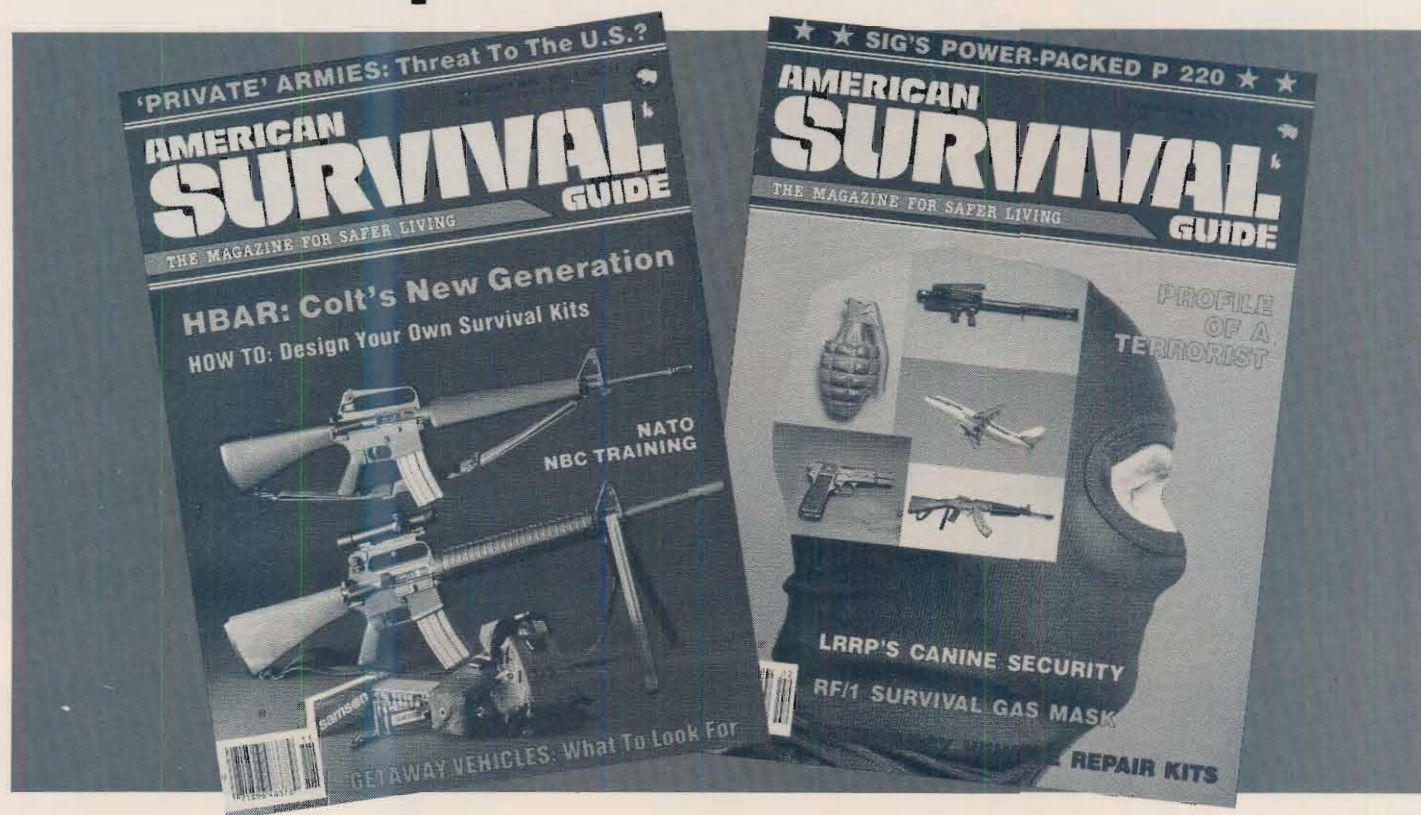
ronmental factors such as use of drugs, etc.

Again, good nutrition and physical and emotional well being help us to effectively cope with stresses in our lives. Some nutrients play important roles in helping us deal with stress, such as vitamin C and the amino acid tryptophan. But how much of these nutrients each of us needs on a daily basis for optimum results is not known. There are some general rules which all of us can follow to help obtain the best available nutrition with the least risk of overdoing consumption of some nutrients and or not getting enough of others.

For one thing, eating good quality, whole, natural foods whenever possible with variety and moderation being a goal in consuming these foods is sensible. At the same time, avoiding the wrong "foods" like high-sugar, high-fat, refined/processed foods is equally important. Food supplements can be quite beneficial to health, but you must be very careful in using them, as you can poison yourself and cause illness and injury by taking too much of them. I have long been a firm believer in vitamin supplements but have also suffered health problems taking too much of one or another of them.

Clearly, eating well and drinking safe, clean water, avoiding the wrong substances — be they "foods" such as sugary pies and cookies and greasy hamburgers, or harmful substances like tobacco, alcohol and drugs—and getting enough exercise and paying attention to psychological and spiritual needs can help you be and stay healthy. In doing this you will be better able to cope with survival in day-to-day living as well as in emergency situations. Everyone, however, must work out their own personal programs for obtaining and maintaining health and well being. Pay attention to news of the latest developments on these fronts and read up on available literature on the subjects, then set up your own program for living a healthy and more productive life — *Jim Benson.*

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Fed Ord M14SA Rifle

All G.I. mil spec parts...

By Jim Benson

THE M14 rifle in 7.62 NATO (.308 Win.) caliber, basic U.S. military infantry weapon before adoption of the M16 and still in use by our armed forces today, is now available in semiautomatic-only version from Federal Ordnance, Inc. of South El Monte, California.

Fed Ord has been buying and importing U.S.-made select fire M14s from Israel — minus the full-auto receivers — and fitting them with Fed Ord-made semiautomatic receivers.

All parts, except for the new semiauto receivers are original, U.S.-made military specification. The investment-cast Fed Ord receivers are also military specification. Most of the stocks on these weapons are desert tan fiberglass, making the rifles lighter in weight than the wood stock models. The holes on the stocks where the original selector switches were located have been filled in with bondo and do not show at all.

The first of these rifles Fed Ord had available were already sold by the time we obtained our test sample from the firm, but more are on the way from Israel and were expected to be available for sale to dealers and the general public by the time this article is published.

The air-cooled, gas-operated M14 was designed primarily for semiautomatic fire and due to the logistics problems of supplying enough of the 7.62 X 51 mm NATO rounds and their rapid expenditure in full-auto firing mode, some military field commanders had the selector switches locked in semiauto mode so their troops wouldn't go through ammo too quickly.

These rifles were made to fire only G.I. specification ammunition and great



Accessories available for the Fed Ord M14 include original G.I. cleaning gear, slings, magazines and pouches.

caution should be used in firing hand-loaded ammunition in them, notes Steve Langford, Fed Ord's director of marketing. Owners and users should realize that bullet weights and powder burn rates of any handloads used should approximate those used in military ammunition for proper and safe operation of the M14, he said. That is, approximately 150-grain bullets and powder that burns at a rate similar to military specification powder.

In general, Langford said, 140-grain to 180-grain bullets shoot best in the M14. A match load that works well is the 168-grain Sierra Match King hollow point bullet with 42 grains of IMR4895 powder in a military match case. This is the load used by U.S.

military match shooters, Langford said.

Field Testing — At a public shooting area in the mountains outside Los Angeles, we tested the function and accuracy of the Fed Ord M14 with some Winchester and PMC ammunition.

We learned later that we should not have used the PMC 150-grain soft point hunting ammunition we had brought along, although the PMC 147-grain ball ammunition we shot in the rifle worked well with good accuracy, as did the Winchester 147-grain military ball we shot in the M14.

The rifle performed excellently for a period of time with very good accuracy shooting at targets from approximately 100 to 200 yards distant with-

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AF-99AF, PT92-99	17 rounds	MAA 9317
Sig Sauer P226	17 rounds	MAU 9217
Ruger P85	17 rounds	MAG 9085
Browning High-power	15 rounds	MAP 9015
Beretta Compacts	15 rounds	MAS 9115
S&W 459, 559, 659	17 rounds	MAW 9117
Marlin Camp Carbine	17 rounds	MAW 9117

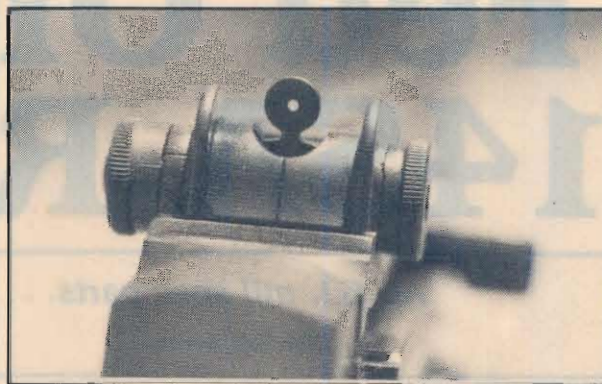
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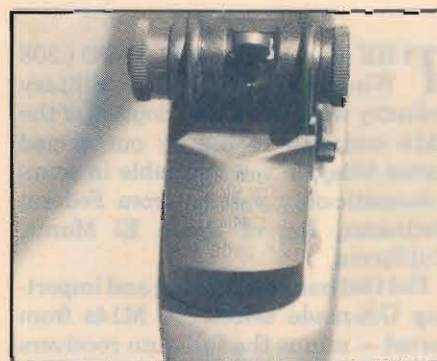
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LEFT & LOWER LEFT —The M14 sights are a rear peep adjustable for windage and elevation and a fixed blade front with protective wings.

BELOW — Fed Ord makes its own mil spec semiauto receivers for these rifles. All other parts are original U.S.-made G.I.



Fed Ord M14SA Rifle: Tech Specs

Caliber	7.62 NATO (.308 Win.)
Action/operation	semiautomatic
Lengths:	
Overall with flash suppressor	44 1/8 inches
Barrel	22 inches
Weights:	
Without magazine	8 1/2 lbs.
With full magazine, cleaning gear	11 1/4 lbs.
Muzzle velocity	2,800 fps
Cyclic rate of fire	700 rds per min.
Sights:	
Front	fixed blade
Rear	click adjustable for windage, elevation
Trigger pull	5.5-7.5 lbs.
Range	max. 3,725 meters; effective 400 meters
Price, suggested	\$629
Distributor	Federal Ordnance, Inc., Dept. ASG, 1443 Potrero Ave., So. El Monte, CA 91733; (818) 350-4161

out a rest. Then we experienced a malfunction which forced us to halt our testing. After firing one of the PMC soft points, the rifle failed to eject the spent case and we discovered we had lost our extractor.

I took the rifle back to Fed Ord and

one of their gunsmiths on the premises immediately replaced the extractor and test fired 20 rounds of military ball ammunition in the rifle, which once again functioned perfectly. At first we thought either the spring tension on

(Continued on page 66)

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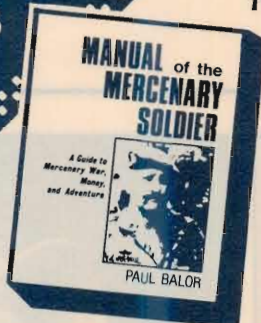


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by Paul Balor

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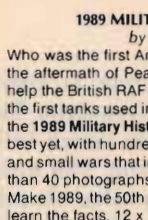
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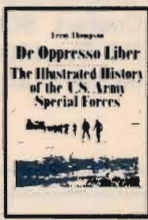
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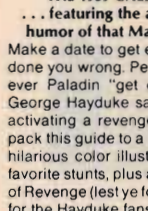
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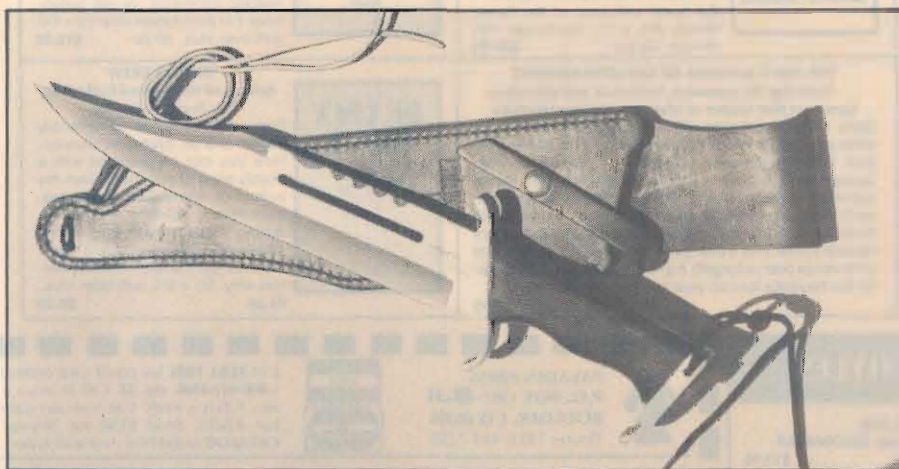
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Rambo III Knife

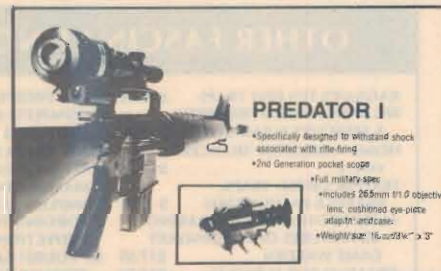
A licensed reproduction of the knife used by Sylvester Stallone in the movie, the Rambo III was designed by master knifemaker Gil Hibben. A full 16" overall, there's no mistake about what you have in your hand. The design of the handle makes it feel like it's part of you when you grip it. The 11" bowie blade is made of surgical stainless

steel. A custom fitted American made heavy top grain leather sheath makes the Rambo II bowie complete. Each knife is fully guaranteed. Retail is \$130 but your price is \$95 postpaid. Send to Great Lakes Distributing, Dept. ASG, 600 W. Orange, Greenville, MI 48838; (616) 754-6694.



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Predator 1, a night vision system that fits in the palm of a man's hand, has been introduced by CCS Communication Control, Inc. The Predator 1 is

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The Paramedic

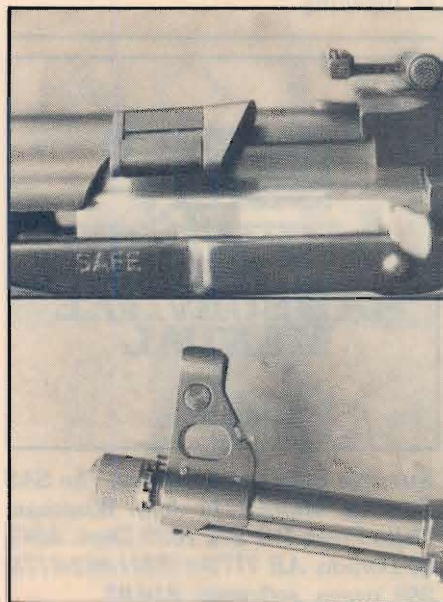
The Paramedic is a new injury care kit from Jordan Osprey, a company specializing in "paramedic quality" injury care kits for the outdoor enthusiast. By design, paramedic quality products are extremely effective and easy to use. Until now, they simply haven't been available in a "user friendly" kit that the public could purchase. The Paramedic is a lightweight, compact, watertight kit designed for portability and ideal for the outdoor enthusiast or traveler. Weighing only 1.4 lbs., it addresses common injuries like cuts, burns, eye contamination, abrasions, strains and sprains. It contains paramedic scissors, 5" tweezers, elastic tape, skin closures, antiseptic flush, selfadhering wrap, non-adhering sterile pads and much more. Contact Jordan Osprey, Dept. ASG, 3636 Camino del Rio, N., San Diego, CA 92108; (619) 284-2766.



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brane. Other features include barrel style speed hooks for fast donning, ski-binding lugs on sole and heel grooves, vulcanized DMS sole for maximum bonding and durability, mud release tread design, Saran ventilating insoles, grab loop, G.I. black for duty wear. An excellent value for \$89.95. For a catalog containing this and many other survival products, send \$1 to Brigade Quartermasters, 1025 Cobb International Blvd., Dept. 89E, Kennesaw, GA 30144-4349; telephone (404) 428-1248.

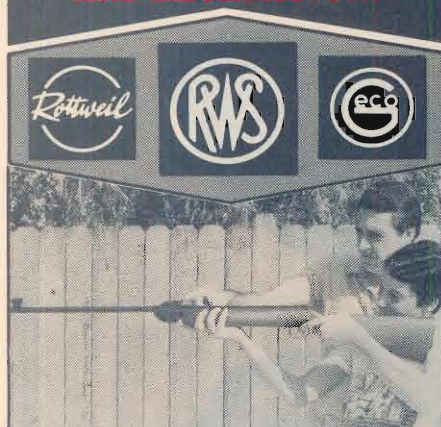


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Territorial Armory of Tucson introduces two new accessories for your

AK-47 assault rifle. One is a genuine East Bloc blank fire adapter. The other is a brass buffer to protect brass for reloading. The blank fire adapter is perfect for re-enactment groups. It permits the use of blank ammunition, now readily available from many sources, in your AK assault weapon. Knurled, machined steel, using the reverse AK thread, this item replaces the muzzle nut (brake) on any standard AK or RPK. The price is \$19.95 plus \$3 shipping each. Guaranteed. The AK-47 brass buffer simply snaps on to the receiver cover at the upper rear of the ejection port of any AK, Galil, Valmet, MAADI, etc. Protects brass from dings and protects receiver cover from finish damage. Steel and rubber, this item also drops your brass closer to you for ease of policing. Price is also \$19.95 plus \$3 shipping each. Guaranteed. Contact Territorial Armory, Dept. ASG, 4455 South Park, Suite 106, Tucson, AZ 85714; (602) 741-2333. ●

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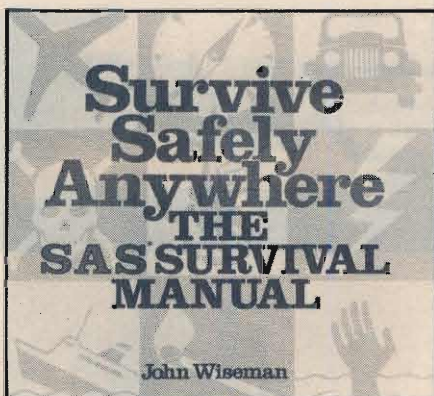
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BOOKS/VIDEOS



So You Bought a Shortwave Radio!
By *Gerry L. Dexter*; Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147; (414) 248-4845; 74 pages, softcover; \$6.95 plus \$1 shipping.

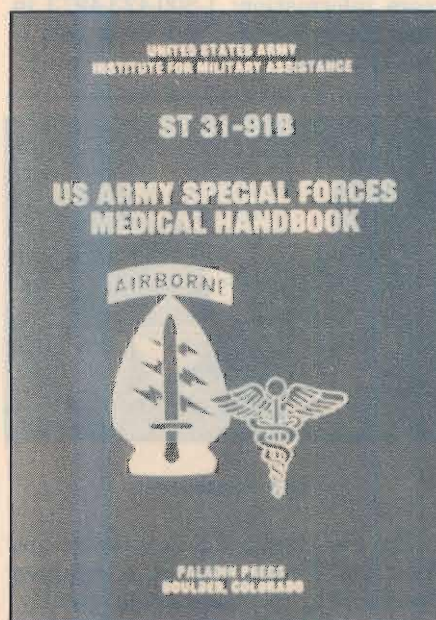
This is an easy introduction book to get you started in shortwave listening. Special emphasis is given to helping the newcomer get over the "audio warp" most encounter in making the switch to shortwave from ordinary AM/FM listening. The book covers all the basics in an easy-to-understand style, provides many sources of more information about particular aspects of shortwave listening, from where to find English language foreign broadcasts to where to get more information about becoming a ham radio operator. There are lists of clubs for shortwave listeners, companies which specialize in providing equipment and accessories to the listener, and books on various aspects of listening.



Survive Safely Anywhere, The SAS Survival Manual, by *John Wiseman*; Delta Press, P.O. Box 1625, Dept. ASG, El Dorado, AR 71730; (501) 862-4772; 288 pages, softcover; \$16.95.

We first reviewed this book in the January 1987 issue of ASG. Formerly sold through Crown Publishers, Delta Press is now handling this superb manual of survival. John Wiseman,

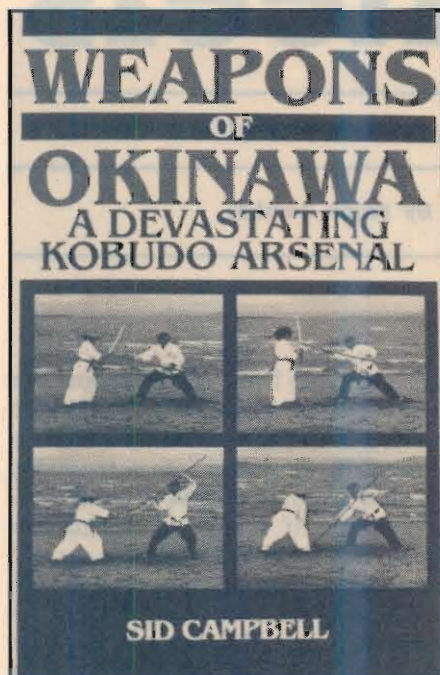
who authored the book, is a 27-year veteran of the British Special Air Service and ran the SAS survival school. The manual covers just about every survival subject and is filled with great illustrations and graphics. There are chapters on "essentials" (being prepared, research, planning, equipment, knives, facing disaster, basic needs, water, salt) "strategy" (car accident survival, disaster in the air), climate and terrain, food gathering, camp craft, and shelter making. The writing is concise and yet covers a tremendous amount of vital information. If you only had one survival manual, this would probably be one of the best.



US Army Special Forces Medical Handbook, ST 31-91 B, by *Glen K. Craig*; Paladin Press, Dept. ASG, P.O. Box 1307, Boulder, CO 80306; (303) 443-7250; 580 pages, softcover; \$16.95 plus \$3 for shipping and handling.

This book was designed to serve as a ready reference and review for Special Forces (SF) medics. It covers diseases and medical problems that SF medics may encounter in various areas of the world. The comprehensive text includes disease diagnosis and treatment, drugs and dosages, emergency paramedical skills and preventative medicine. Special sections cover wartime emergencies: nuclear, biological and chemical warfare burn and blast injuries, and emergency war surgery.

Also covered is primitive medicine, veterinary medicine, obstetrics, pediatrics and orthopedics. This up-dated version contains the medical information you may need to stay alive in the field.



Weapons of Okinawa, A devastating Kobudo Arsenal, by Sid Campbell; Paladin Press, Dept. ASG, P.O. Box 1307, Boulder, CO 80306; (303) 443-7250; 153 pages, softcover; \$12 plus \$3 for shipping and handling.

Okinawa, one of the largest and most important islands of the Ryukyu archipelago, is located off the coast of mainland China between Japan and Taiwan. This small island is recognized as the birthplace of the lethal fighting arts. Many of the martial art weapons are makeshift weapons: objects that could be picked up and used to supplement their empty-hand techniques. This book gives the history and development of each of these weapons and illustrates their use in fighting sequences. Staff weapons like the kushakubo, swords like the sai, and the spear known as the Nuntebo are described. Weapons like the nunchaku and san setsu kon (wooden sections connected together with cord or chain) were tools originally used for threshing rice. The book explains how these implements were borrowed by the martial arts and how their use has been

(Continued on page 67)

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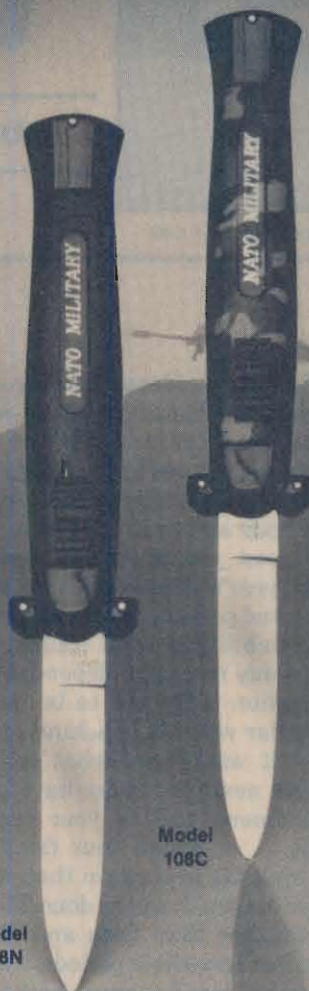
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This 1947 Plymouth is still running. How long will the Honda next to it run?

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By Ralph Zumbro

IN the erratic world we live in, the only way out of trouble for the average American family is their own built-in transportation. And the more reliable that vehicle is, the more likely it is to get you clear of catastrophe.

The very word survival, though, seems to warp people's minds. Just as they think battle rifle instead of meat gun, they also think 4WD machomobile in any hairy situation. . . 'tain't necessarily so. In fact, many of today's four-wheelers are so complicated that you're actually better off with an old sedan.

Think back a moment. All of this nation's highways were pioneered before the days of 4x4 drive, by two-wheel drive touring cars. In the 1920s an American named Roy Chapman Andrews explored the Gobi Desert with a column of Packard open touring cars. Again, open autos with high ground clearance and two-wheel propulsion. This professional archaeologist, who was the model for Indiana Jones, took these unmodified sedans directly onto the centuries-old caravan trails that had been traversed only by pack animals. He cut traveling time across Mongolia from nine months to seven days!

You can eat your cake and have it too. It is perfectly possible to build up a hobby, or second car, that is also a survival vehicle as well as a fun machine. The basic criteria are that the chosen vehicle should have high ground clearance, short overhangs past the wheels and a good, solid frame.

Barring accidents and corrosion, car bodies and frames just don't wear out. Most cars are sold because of style changes, not mechanical obsolescence. The engine is what wears out, and if the body suits your needs, a new mill will cost you about one half of the first year's depreciation of a wholly new and probably over-engineered car.

Reliability is what counts, and the only way to ensure dependable transportation is for you to be intimately familiar with the machine — to know how it works and what is likely to break next. You must have excellent machinery, and be your own mechanic. . . or watch your family suffer or even die in a storm that you could have outrun. It can be done. Machinery is tougher than flesh and blood and can last incredible periods, if cared for. Regular maintenance, backed up by solid mechanical knowledge, is all that is needed.

If you're 32 years old, you've probably been passed on the freeway by a '56 Chevy running its original engine. It's in better shape than you are at 32 because someone pulled maintenance.

Recently my wife and I had occasion to drive her mother's 1971 Torino half-way across this continent, and we got an education in the process. The first lesson was that west of the Mississippi, the 55 mph speed limit is invalid. If you're doing less than 65, you are blocking traffic.

The second interesting thing we learned is that out in the far places,

old iron still lives. In Oklahoma, we got our doors blown off by a '52 Ford towing a '67 Camaro. And just east of Flagstaff, we pulled into a truckstop to find a couple of kids driving a '47 Plymouth. If the basic design was good, like a Checker sedan, a car will last just as long as you need it to last.

Think of military equipment for a moment, and the concept becomes clear. A B-52, for instance, is older than its crewmen, and most of them have been shot at and hit. The Israeli army is running Sherman tanks, Jeeps and half-tracks that were built before a lot of us were born!

The concept is even financially rewarding. Keep a car past 15 years and the value starts to climb like a moon rocket. You can also convince your wife that it's a good idea. After all, some of those old cars were a lot more attractive than today's ricemobiles, and there's a lot more iron around you in an accident.

For a given vehicle to merit consideration as a permanent addition to your family, however, it must have several features. First off, it must be relatively simple, both in design and concept. It must not be loaded with luxuries and fuel-gobbling power options. Corrosion must not have set in, and the first thing that should happen to your new mechanical partner is the application of a full undercoating. Structurally, a frame will outlast a unit body, at least in the larger sizes. If your personal needs don't require anything larger than a VW, then unit body construc-

tion will go the distance. There are Bugs from the fifties still running, and you can get new engines from Sears by mail order.

What we're going to do here, is pick a sound body, in whatever style suits your family needs, and remanufacture its power plant and running gear to new status. You may need a sedan, station wagon or pickup, but don't overlook old convertibles. Those ragtop chassis were much heavier than an equivalent sedan, and with the top down, the visibility (and fighting ability) are superb. After all, what is a Jeep, but a high clearance ragtop?

In selecting your machine, however, the one thing you should avoid at all costs is high RPM, high speed engines. Regardless of the claims of engine and lubricant manufacturers, fast turning engines cannot be made to last as long as heavy, slow turning mills. That is a mechanical absolute, and this ol' wrench bender has been the route, both ways. Given identical driving conditions, the fast turning engine will wear out several hundred thousand miles before the old muscle engine starts to lose compression or oil pressure.

The reason for this is piston speed, and a phenomenon called "boundary lubrication." Simply put, the faster an engine turns, the faster the pistons have to travel. Sooner or later, a speed is reached where the rings tear the oil film off the cylinder walls. Then metal touches metal, and it's all over. Speed kills engines as well as idiots.

Marine racing engines, for example, are good for one race only. As a comparison, I have helped install the second set of rings in a trawler engine that was built in 1906. That vessel has been in both arctics, and has fer-

ried refugees out of Germany in both world wars. It makes its 200 horsepower at three hundred RPMs, as compared with the over six grand of the racing engine.

As I stated earlier, the body and frame will outlast you. The engine, tranny and running gear are where all the wear takes place. Let's take a look at that statement and see what it means. Price out a new car, say a Ford Mustang GTO (drool); you're looking at a base price of twelve grand. If you pay cash and drive it off the showroom floor, you just took a three thousand dollar shot in the savings account.

Repowering — Everyone knows about instant depreciation, and most folks accept it, reluctantly. What they don't realize is that if you pull simple maintenance on the body, *half* the initial depreciation will repower that sucker every hundred thousand miles or so. You can buy a 10-year old car and remanufacture its power system cheaper than you can buy a new one. The chassis will accept any engine the manufacturer ever made, back to the middle fifties.

So, since we're going to repower the vehicle, you can get your basic chassis from any cheap source. As long as the hulk's size and strength meet your criteria, it doesn't matter if it has to be towed home, because we're going to bring all the wearing components back to zero running hours — better than Detroit new — and you'll get an education in the process. You, by yourself, can replace the engine, transmission and running gear, putting in all new components to meet your specs.

Now I know all this sounds daunting, but I spent six years teaching Vo-

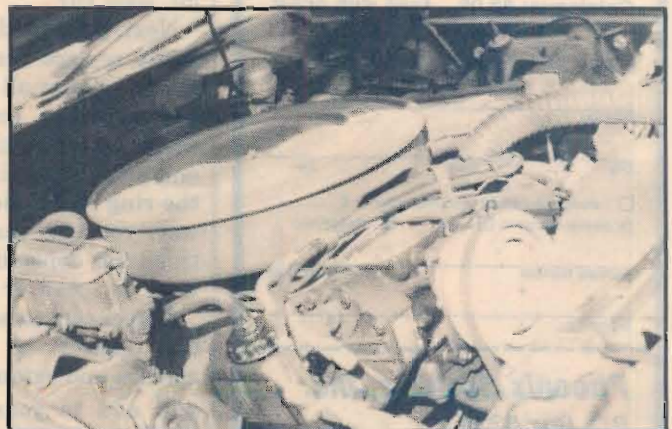
tech in a junior college, and had no trouble imparting basic mechanical smarts to a wide range of students. One of my classes ran the gamut from bobby-soxers, through housewives and would-be mechanics, to a brain surgeon. The infernal combustion engine isn't that complicated. Only the peripheral electronics get tricky, and we'll put only as much of that as we need back in there.

The two halves of the process are now apparent. Basically, you just acquired a hobby. You've found the old bomb that's going to be your project, and you'll have to enroll in the local junior college or adult education course to learn all the gory details. Since remanufactured machinery can be bought, only the tools and skills for installation will be needed. Acutal interior engine work can come later. But you can say goodbye to installment payments and garage bills.

Once you've got the new chariot home, the first operation is stripping out. Pick a good comfortable place to work, because that heap will probably be immobile for two or three semesters. A little engineering will have to be done, because the engine will be coming out, and the body will have to be blocked up in such a manner that the engine and all the running gear can be reached.

Raise each corner separately, and put a solid support under it, such as a commercially manufactured car standard. Once all four corners are blocked, test the stability of the job THOROUGHLY — you're going to be spending a lot of time down there.

Pull the seats and upholstery first, so you can get at the machinery. You don't have to replace the whole interior, by the way. Only the seats you're



This 1971 Torino with 42,000 miles on it and EMP-proof ignition is a little old lady special. They still exist! The engine room of this vehicle is a lot simpler than any modern vehicle.

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Lifetime Wheels



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going to use go back, and delicate fabrics can be replaced by varnished wood on the door panels. In a wagon, for instance, the rear seats may be replaced by cargo space, extra batteries and long-range tankage. Now, the decks are cleared for action, and you can go to work.

Running gear is first. Pull the four wheels, including the brake drums and rotors, and send them to the shop to be turned. While the machinist is truing up the surfaces, buy a set of shoes and piston and spring kits for all braking surfaces. Get a brake hone and rework all wheel cylinders and the master cylinder. You're actually building a new car to your own specs, so don't forget to replace the wheel bearings. This means shop pressing for many installations, so you're going to be spending a lot of time getting to know your local machinist. He's as valuable a source of information as the Vo-tech instructor and the shop manual for your car.

Next, pull the drive shaft and arbitrarily replace the bearings in all U-joints. Inspect all brake lines for rust and corrosion, and replace anything suspicious. Pull the cover off the rear end and inspect it for undue wear on the ring and pinion gear. And, by the way, you can change gear ratios at this time, depending on whether your need is speed or power.

Suspension comes now, and here, you can upgrade by installing overload springs and extension shackles which will add to your ground clearance. You'll want new shocks, of course, and a full set of skid pans must be fabri-

cated. As the list of parts starts to add up, don't panic. It's still less than monthly installments, and far, far less than the total cost of a brand new car. All rubber bushings get replaced, naturally, including the axle bumpers.

Take out the entire exhaust system and scrap it, unless there's a new, warranted-for-life muffler down there. The catalytic perversion can go too, unless you're stuck in California. What you are assembling, piece by piece, is a basic, pre-1970 automobile, with any modern improvements that are applicable... "Take the best, leave the rest."

The ball joints, too, need to be replaced. You'll have to drive the old ones off with a chisel, but the new ones can be bolted on, and another set of spares takes up almost no room at all. We've gradually been working our way forward, and we're almost there. Once the steering has been gone over and the slack adjusted out, you can begin slowly and carefully installing the whole collection of new parts. Every one of those parts and bolts has a specific torque setting, and should be installed correctly. It's your tail on that lonely mountain road, so pay attention!

You now have suspension, brakes, steering, wheel bearings, and you're into the drive chain. Let's crawl out from under that bucket of bolts and get under the hood, which you might just as well remove for convenience. Also, for access, remove the grille, radiator and air conditioner condenser. Swap off the old radiator to a custom radiator shop for one with the best fin

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Wheels

count and most passes that he can build for you. Cooling is important to the transmission as well as the engine, so the tranny should have its own little radiator too.

It makes sense to keep the air conditioner, because this car will be normal working transportation and a vacation special, along with a getaway vehicle. If mileage becomes critical, the air conditioner, unlike power steering, can simply be turned off. Also, there's not much difference between the power draw of an A/C and the aerodynamic drag of four open windows at normal highway speeds.

Power Pack — With the front and top of the engine compartment removed, access is a breeze. You've already zero-timed the whole underside of the car; now you're looking at the heart of the matter, the power pack. Here is where most of the problems have always been found, and here is where industry does its experimenting, and where government has done its interfering. This, then, is where we strike a blow for freedom.

By the time you've redone the suspension, your courses will have taught you how to set up an engine. So now, you're ready to pull your own. I mentioned earlier that you can repower for less than the cost of depreciation; now let's take a close look at those figures.

You can get engines mail order, exchange, from many companies, including Sears and Wards, in two basic forms, full engine or short block. In this day and age, with leaded fuels being phased out, you need to specify full-engine with hardened valve seats and stellite valves to take the new fuels. The cost isn't that prohibitive. Wards lists a 302 Ford V-8 (5.0 litre) with heads, for \$1,050, trade-in on your old mill. For the automatic tranny, they ask only \$322, with torque converter. Remember that \$3,000 depreciation?

If you buy from a mail order company, they buy your engine back, and you ship it on the same pad that their remanufactured mill comes on. Individual companies differ, but none send more than the basic engine, so remove all such things as valve covers, alternators, starters, etcetera, and inspect them for reuse. In most cases, you're going to be better off swapping them for remanufactured or new parts. Or

Continued on page 38

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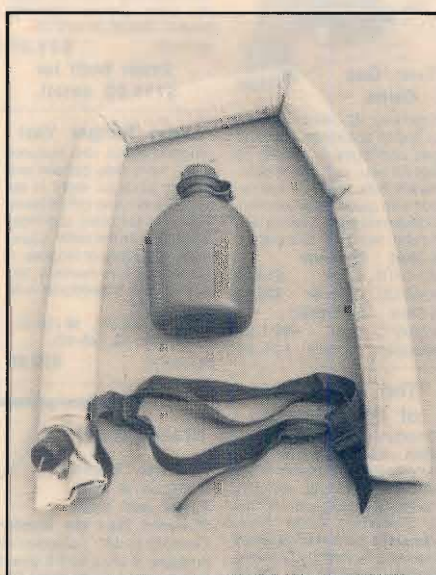
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Restricted Movement

Confinement Exercises

Staying alert and agile is essential to survival! . . .

By W. Ed Poe

SEVERAL hours or days of restricted body movement can create havoc on the human body and soul.

If you have ever been cooped-up inside a small dome tent for a couple of days or have spent several hours sitting in some form of transportation, you know what I mean.

Trying to stand up, making quick exit moves or just going to the john can become a stiffened and painful experience. I have found the older one gets, the worse the condition gets.

There is a way to help beat the problems of pain and discomfort related to lack of physical activity, be it on a plane, in the back of a 4x4 or within a snowbound tent. It is nothing more than a few exercises which will "stir up" the blood and relax the unused muscles. Exercises will also help one think better and quicker.

The absence of physical activity can cause the body to "get stiff" and to feel tired and lifeless. This is usually caused by poor blood circulation and muscle tension. Headaches, low back pain, with or without muscle spasm, mild disorientation and "sleepy feet" are additional signs of cooped-up fatigue that you should be aware of.

There are times, such as being caught in an unexpected snow storm while backpacking in the wilderness that a long-term confinement period may become necessary. Planned travel conditions, such as auto, boat or aircraft can create travel fatigue when it extends over long hours of just sitting. With a little forethought, research and training, you can overcome the pains and sluggish feeling from the cooped-up periods.

Having the body wrapped in tight fitting clothing during the inactive periods can slow down blood circula-

tion and restrict breathing. If you know you are going to be restricted in movements for several hours or days, wear lightweight and loose fitting clothing. This is one of the major mistakes made by people when traveling. Tight jeans, heavy wool suits or coats, tight, pointed-toed shoes and ties can cause more problems than they are worth.

I have found that it is far better to dress comfortably in a cotton bush suit and lightweight walking shoes than to wear a business suit on a plane. I find time to change clothes after arrival, if necessary. I may not look as business-like as the guy in the vested suit, but I will be able to survive the strain and stress of traveling far better.

When having to sit for long periods, unlace your shoes or take them off.

Walk up and down aisles or just wiggle your toes as often as possible. I have found that walking sock-footed up and down the carpeted aisle of commercial aircraft can really help prevent cooped-up fatigue. Unless you have a foot odor, no one will know you are shoeless, or in most cases, not even care. The walking will help body circulation and stretch just about every muscle in your body.

Some medical doctors recommend a low-sodium diet during a restricted period. I try to maintain a daily low-sodium diet, so a lower amount of sodium does not affect me as it might someone else. Most airlines and trains serve food that is heavily salted during the cooking and preparation. If you are unable to order low-sodium food from the travel firm, then I suggest you brown-bag your meals, especially on long-term trips. The amount of sodium intake can really make the difference in the way you feel upon arrival.

Exercise — Clothing and food alone will not cure a severe case of cooped-up fatigue. Exercise is the real key to a more enjoyable restricted period, be it in a tent, pickup truck or airline seat. Regardless of where, there are some good exercises that can help overcome weariness and aid in promoting alertness.

The exercises that I recommend for confinement situations are the same ones used by our little band of outdoors-die-hards when we travel by any of several means of conveyance. The exercises are simple, yet effective, body/muscular stretching and isometrics (resistance). Our group has learned to do the exercises in spaces no larger than a canoe or while riding in a van down an interstate highway.



Author's favorite travel clothing is the 100 percent cotton C.C. Filson Co. bush suit.



Long hauls, crowded conditions and lack of body movement causes a sluggish feeling, mental depression and stress, any of which could be fatal in a survival situation.

Frequent stops for exercise and toilet use is helpful in reducing travel fatigue.



Stretching the muscles can be a good muscle builder, as well as a relaxer when properly executed. Resistance of muscle against other muscle power or a stationary object is an excellent form of muscle building and a great way to increase your blood circulation and breathing capabilities.

When performing these exercises, or any exercises for that matter, it is best to move slowly, smoothly and breathe as naturally as possible even during the extreme levels of activities. Holding the breath during the exercise program will not help the blood circulation or breathing.

En route exercises became popular with our group several years ago. We found that people traveling in confined areas without a plan of exercise were less than 100 percent effective at their jobs upon arrival at the destination. Those men who exercised frequently during the travel period were very effective and able to perform their responsibilities in a more professional manner. The exercise provided them

with less stiffness and sluggishness; two things that can slow both the body and mind when attempting to do a job of any kind.

My neck is usually the first part of my body to start hurting when I have to sit around for long periods of time. It could be caused from lack of activity or general stress.

Either cause can be corrected by sitting up straight, relaxing the shoulders and stretching the neck upward for a count of 10 or so. Then, slowly attempt to lay the left ear on the left shoulder without raising the shoulder to meet the ear. It is not likely you will get the ear on the shoulder, but go as far as you can, hold for a count of 10, then back to the upright-stretch position.

Do the right side next. After completing the right side, go back to the upright position, tilt the head down, with chin towards your chest and hold for a count of 10. Back to the upright position.

Move the head directly back as far

as possible. Hold for the count of 10. Back to the upright.

Now repeat all the motions and hold for the same counts. Repeat at least three times. Do not roll your head and neck in an attempt to make a circle. Many doctors feel that rolling the neck may cause undue damage by putting pressure on the vertebrae. Breathe naturally, move slowly, maximize the stretch and hold for the count. The more often you do this neck exercise on a day-to-day basis, the less painful it is to do when confined.

Mental Well-Being — There are times, while confined to a seat or small space for a long period of time, that I might do all the exercises at least once per hour. Normally, I do them all prior to destination arrival. This gives me the get-up-and-go to make the mad dash to the front of the bus, or whatever. Not only will exercises help your physical condition, but will do wonders for the mental part of you, too.

(Continued on page 52)

Swedish Ljungman G.42B:

Hakim Rifle



'It's really a match rifle in military livery' . . .

By Jim Thompson

HAKIM may not appeal to you. It's accurate, moderately heavy, very sturdy, and recoils little; it's also an Egyptian-made copy of an excellent semiautomatic sporting rifle, and has some operating characteristics that are a little alien to the American user.

Of course, it is a very rapid bullet delivery system with 10 shots in the magazine that sells virtually everywhere for less than \$200 in "select" (NRA very good or better) condition.

Mine was purchased from Century Arms, and was "select." Normally, my gun articles avoid the operation and technical aspects of particular weapons. I figure, if you don't know how to actuate a bolt handle, I probably can't help you and whatever I can run in a smallish article, you can get better, less compressed, and more detailed field stripping instructions out of a manual.

That's normally. However, I was unable to find a manual on this rifle or its Swedish forebear, the Ljungman G.42B, anywhere, so this article includes one. If you're even considering the purchase or use of a Hakim, trim this article; otherwise, you might shed a little blood, as I did disassembling



An inexpensive B-Square Scope Mount can be coupled with a long-eye-relief pistol scope to enhance accuracy.

the bolt. Not as much blood, mind you, as the first time I stripped an M-1 Garand . . .

Hakim is a very solid rifle, whose design and factory for fabricating this very robust copy of the Ljungman were sold by the Swedes to Egypt sometime in the 1950s. Using the Eklund-Ljungman gas system, in which the gas piston and operating rod are dispensed with and gas flows directly to the bolt via a stainless steel tube, the Hakim preceded the AR-15/M16 .22s with considerable simplification. Indeed, were the bolt not complicated by use of a carrier, cover and bolt itself, with tight clearances between each, the rifle might be almost impervious to sand. As it is, the gas valve has to be ad-

justed, more so with the grossly underpowered American ammo, more often than most shooters would like, and the bolt can be seriously inhibited by sand. Fortunately, you probably won't be shooting yours in a Sahara sandstorm; one wonders, however, at the acumen and drive of whatever socialist Swedish salesman peddled this rifle to King Farouk.

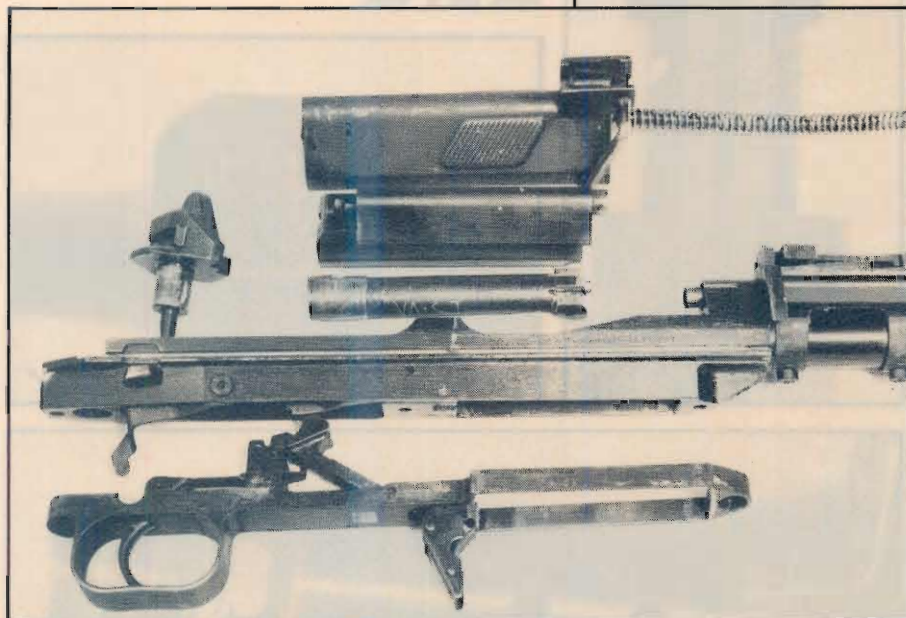
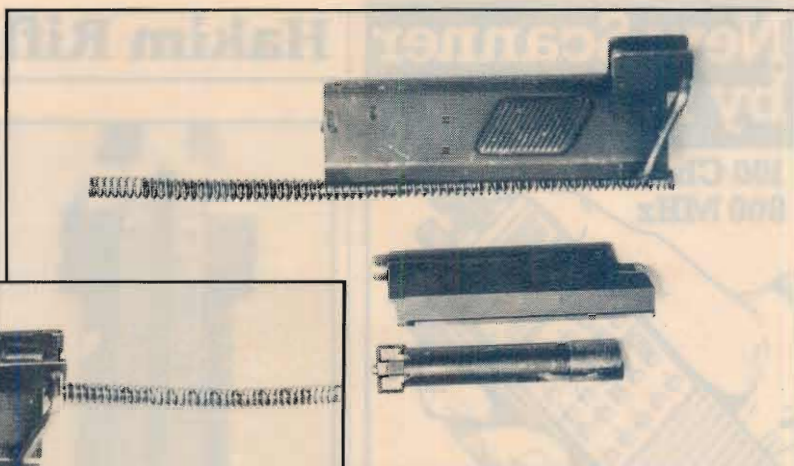
My Hakim, which was in truly excellent condition, was purchased with quantities of Portuguese, Egyptian, and Yugoslavian surplus ammunition. The 7.92mm German service cartridge has

always been one of my favorites. It has about the same punch as .30-06, a bit more than .308, seems more accurate downrange in a quality rifle, and offers a lot of bullet choices. Unless, of course, you like .30/40 Krag power equivalency, and then you get the underpowered American loads. Trouble is, while this flexibility allows the non-handloader to have a "lightweight" load and normal power load, such "squibs" don't work well in a cannon like the Hakim, where the gas gush has the ancillary function of shaking loose the grit in the gas tube.

Accuracy — Best accuracy with the surplus stuff was with the Portuguese ammo (about 2-inch groups at 100

RIGHT — The bolt group. The bolt return spring is very powerful. Special caution must be exercised in removing or replacing it.

BELOW — Major moving parts of the Hakim Rifle.



Activating it requires, from the closed position, with bolt body and carrier forward and bolt cover to the rear, grasping the activating handle, pushing the bolt cover *forward*, then back, whereupon the bolt release is engaged, sending bolt and carrier forward to strip a cartridge from the magazine and chamber it.

The magazine of this rifle is intended to be semi-permanent. That is, normal loading is via chargers or thumb pressure through the top side. The magazine is released by releasing the large catch first, then pressing forward on the whole mechanism with the thumb, and pulling the magazine straight out. No rocking or forward pressure is required. The magazine is a heavy, milled unit, definitely not designed to be thrown away.

The gas valve is located about midway down the barrel, with a triangular adjustment nut on top, indicator arm showing striations just above the gas tube itself. The control opens to the left. With normal power ammo, in clean condition, the center position works fine; in dirty condition or with American factory ammo, several clicks to the left are required to allow the bolt to fully reciprocate. The innards of the tube can be cleaned between magazines with a spray of freon from a can, for those who demand cleanliness. Clean from the rear (chamber) end.

Stripping — To prepare to strip the rifle, remove and unload the magazine and check to assure the chamber is empty. To strip for cleaning or inspection, first remove all the screws in the stock and handguard. NOTE: there are three in the handguard, one under the magazine. You have to remove the ones on the front and rear bands and band retaining spring, too. Slide the bands off the stock. You will likely break the

yards) and the Yugoslavian (about 1.2-inches center-to-center at 100 yards). Both the Norma and RWS loads made ragged holes of less than 1-inch at 100 yards. American ammo gave 4-5-inch groups, regardless of brand. The Egyptian printed about the same as the American loads, and the brittle cases tore up their rims from the over-hard, sharp-edged extractor. The extractor, easily removed from the bolt, was polished and edges "softened" in about 20 minutes' eyeball work with a file, 400 grit sandpaper, and a scotch stone. After that, only the Egyptian cases showed any scarring at all, and even they extracted and ejected perfectly.

For an "off the line" unmodified service rifle, this is excellent accuracy. I put about 1,100 rounds through my Hakim, supplied by Century Arms, who also supplied most of the surplus ammo. The RWS and Norma were purchased at a local gun show, hoarded for just such a test; my intention was to put only 5 to 10 rounds of the RWS, which is very expensive, through the Hakim, but when my first three rounds hit in less than a half inch, I got enthusiastic and blasted away the entire 30 rounds. The Norma ammo is more reasonably priced, shoots almost as well, and is far easier to find

on the open market. Both the Portuguese and Yugoslavian ammo shot cleanly, consistently, and well. They're Berdan-primed cases, so keep that in mind.

The rifling on the Hakim is especially well cut and rifled, very uniform, and the compensator *works*. Sights are Mauser-style tangent units, marked in ancient Arabic numerals unlike ours, but the excellent sight hood keeps contrast high. B-Square offers an excellent scope mount for Burris and other long-eye-relief, pistol-style scopes, which is both easy to set up and doesn't attack potential future collector's value of the rifles.

Short Barrel — Forget the ads that say the barrel for this rifle is 30-inches long. It's 24½ inches long, with about 1.25 inch of unrifled compensator/muzzle brake beyond that.

Trigger pull on mine took some getting used to. It's creepier than the usual military trigger, with some drag on the take up, though release was gentle. It was also rather indistinct. This trigger mechanism is easily modified. The hammer mechanism resembles the M-1. More about that later.

The bolt mechanism of the Hakim is not at all like an American rifle.

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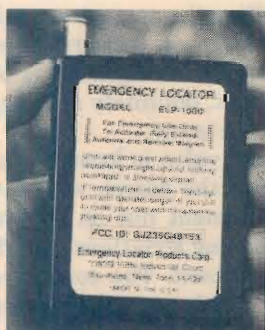
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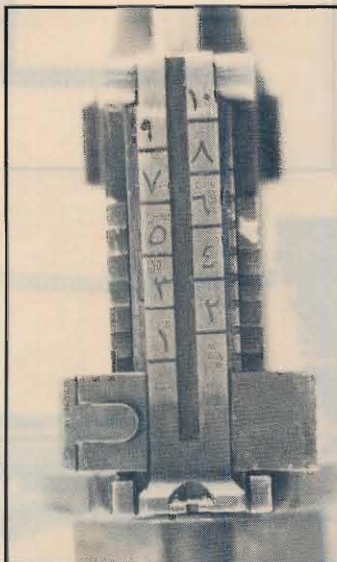
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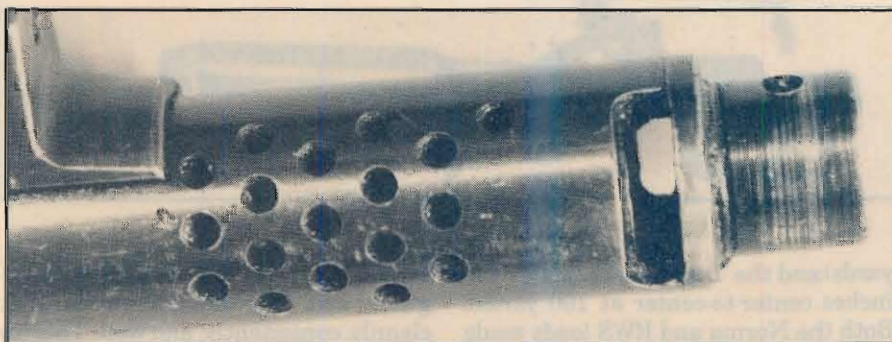
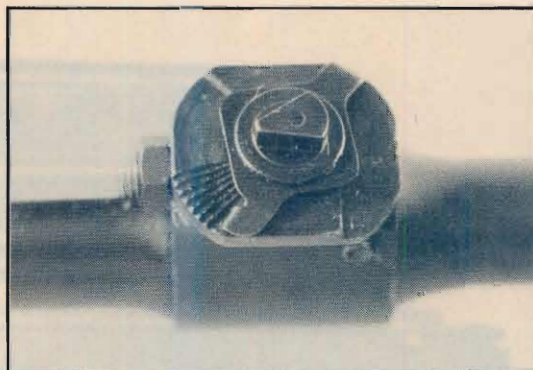
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Hakim Rifle



LEFT — The Hakim's rear sight is marked in Arabic numerals. It's strictly M98 Mauser style. It's fairly easily replaced or over marked. Shortest setting is about 200 meters, which is about correct for 100 yards with underpowered U.S. loads of 8mm ammo.

BELOW — Gas adjustment on the Hakim is about mid-barrel. Left is "open."



The compensator/muzzle brake is extremely effective. Felt recoil is less than M-1 Garand.

middle band retaining spring. It can be replaced with a wood screw through the band. **SPECIAL ATTENTION:** The center screw under the magazine release when unscrewed will release a spacer bushing. This bushing *must* be replaced later, so don't lose it or forget to reinstall it. **SPECIAL CAUTION:** The magazine/floorplate screws are staked into position with hardened wire which may break. These guarantee exact spacing for feeding and hammer operation. Try not to break them, by prying them out with a probe or very small screwdriver; if broken, you can extemporize with wire pressed into position, but be sure these screws are returned to exactly the same orientation.

Removing bands and handguard, wiggle the floorplate/magazine out of the stock, following this with the barreled action. There is no need to remove the compensator/muzzle brake, but do try to avoid wiggling the front sight adjustment screw, or you'll have to re-sight the rifle later.

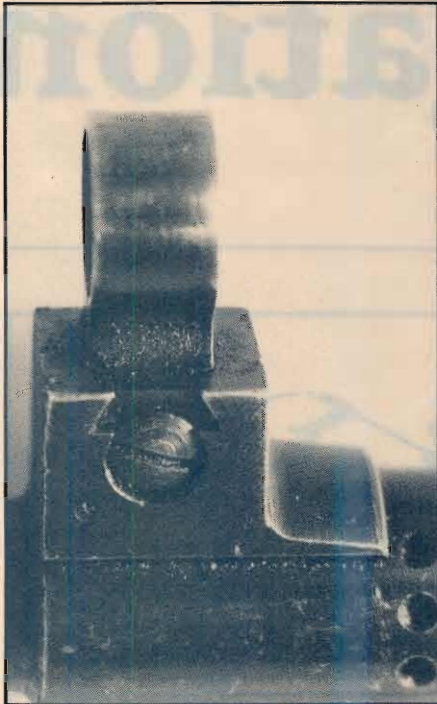
At this point, work the bolt a couple of times, and remind yourself there's a very powerful spring in here. Then, slide the safety lever to the release indicator just right of center on the bolt stop. Then lift it off the receiver. The bolt assembly may then be slid, intact, to the rear off its rails.

When you press the bolt release to separate the bolt from the carrier, point it in a safe direction. Otherwise, either something will get lost or you'll find yourself wounded. In my case, a numb chin and 1/4-inch scar remind of when I first located the release.

I lubricated my Hakim much as I would an M-1, with graphite/molybdenum sulfide rifle grease of my own concoction, and later cleaned a few burrs off the rear/hammer and trigger mechanisms with a stone.

To reassemble, reverse procedure and carefully check noted details.

Conclusions — I have fired the Swedish Ljungman, on which the Hakim is based, and found it of genuine match



The front sight is hooded and adjusts with a screwdriver for windage.

quality. I don't know if all Hakims are as accurate as mine, but I am sure with good ammo, they'll perform as well as the sights will allow. The system is good, precise, durable, but a little too touchy for truly filthy working conditions. And the gas system is sort of a "diamond in the rough."

It's hard to believe, in light of its

eccentricities, that the Hakim was intended for service with ordinary soldiers in Egypt. It's really a match rifle in military livery. I wonder how the rifle would perform with precision epoxy bedding, hand lapped barrel, and just a bit more work on the trigger. I may find out. ●

Hakim Rifle: Tech Specs

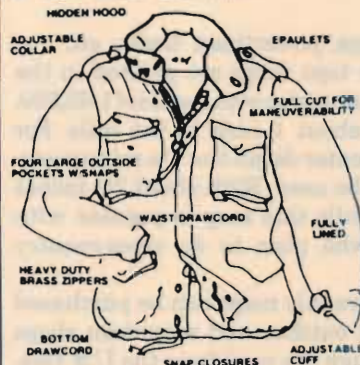
Caliber	7.92 x 57mm (8mm Mauser)
Weight	10 lbs., 4 oz.
Length	47.9 inches
Barrel length	24.5 inches (w comp. 25.8 inches)
Operating system	direct gas, Eklund-Ljungman system
Rifling	6 grooves, right twist
Magazine capacity	10-rd box
Sights	adjustable tangent rear, screw-adjustable, tracked, hooded front
Muzzle velocity	2,635 fps w 198-gr service bullet
Accessories available	bayonet (M94/6 Swedish or Egyptian)
Price, suggested retail	\$125
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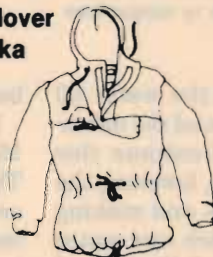
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Wilderness Skills:

Land Navigation

Using a map and a compass:

By Scott Stoddard

NAVIGATION is the process of finding one's present position and then determining the best route to follow to reach a distant goal. We do that today every time we get into our car and pull out of the driveway.

First, we know where we are starting from (home), and second, we know where we want to go, (the grocery store for example). To get to the grocery store we follow a route that has been etched into our mind from repeated trips. We are using a map even though we don't think about it.

A highway map will help us find the best route to a distant city, and if we are pointed in the correct general direction, traveling the interstate is easy when we follow the signs and properly use the map.

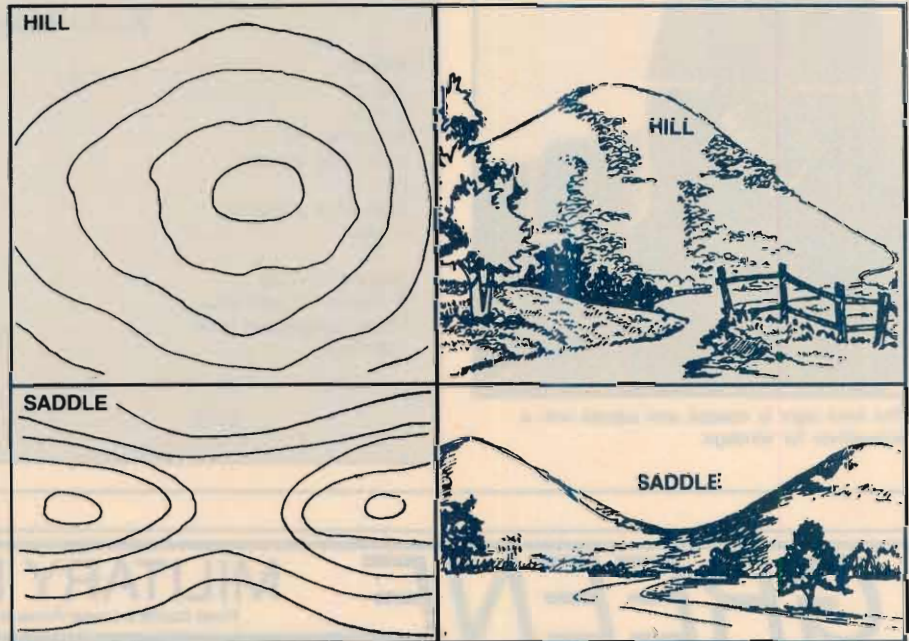
What happens when there are no signs and no roads? How do you find your way in the wilderness? To determine direction, you can use the sun or the stars, or you can use a good compass. To trace distance, identify landmarks, and plan the best route, you'll need a map.

There are many different kinds of maps. Anything from a hand-drawn sketch to a satellite photo might be of use, but the two most valuable maps to use in a wilderness situation would be a Forest Service map and a topographic map.

Forest Service maps are revised periodically by rangers scouting out the country and are the best guides to the current conditions of roads, trails and shelters. The local ranger station will stock these maps and have helpful information on weather and hazards to watch for.

Topographic maps are the prime tool of the mountain navigator. A topographic map details the shape of the land and gives a picture of mountains, valleys and hills through the use of contour lines.

Imagine the earth covered with water so that an entire mountain is barely



Major terrain features are shown by contour lines.

submerged. Now drain the water 80 feet and draw a ring around the mountain at water's edge. Continue this process again and again, lowering the water 80 feet each time and making sure to draw rings at each new water level. When the water is fully drained away the mountain will have a series of lines drawn on it called contour lines. When viewed from directly overhead, there would be smaller rings at the top of the mountain and wider rings at its base. Where the rings appear close together the terrain is steep, where they are wide apart the elevation change is more gradual.

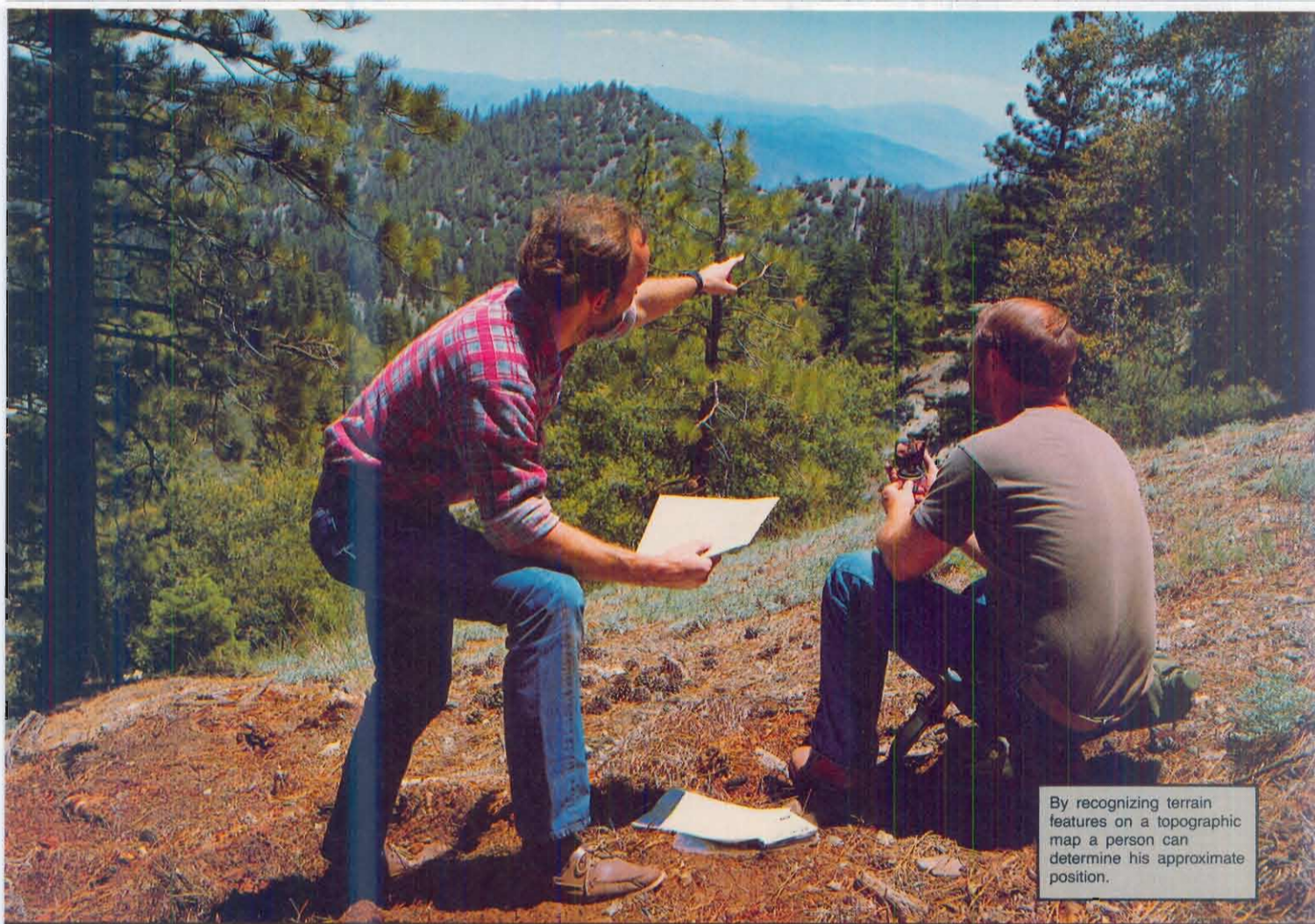
Topographic maps also show features through the use of symbols and colors. Marketable timber is shown in green. Scrub vegetation is a mottled green and white. Glaciers and permanent snow fields are white with blue contour lines. Blue markings indicate water such as streams, lakes, rivers or springs. Black is almost always used to indicate human features such as roads,

buildings, powerlines, trails, etc.

Many topo maps are printed in the 15-minute series with a scale of 1:62,500. That's about 1 inch to the mile. For even greater detail the 7½-minute series can be used. With about 2½ inches to the mile this map is popular with those who plan to do cross-country hiking.

Topographic maps can be purchased at most outdoor and mountain shops or through the mail from the U.S. Geological Survey. Topo maps for areas west of the Mississippi River are ordered directly from U.S. Geological Survey, Federal Center, Denver, Colorado 80225. For areas east of the Mississippi, write to the U.S. Geological Survey, Washington, D.C. 20242. Index maps for each state are free upon request.

Learning to read a topographic map takes a little practice but soon the valleys, spurs, ridges, and gulleys shown by the contour lines will jump out and it will be possible to roughly deter-



By recognizing terrain features on a topographic map a person can determine his approximate position.



The navigator's tools: map and compass.

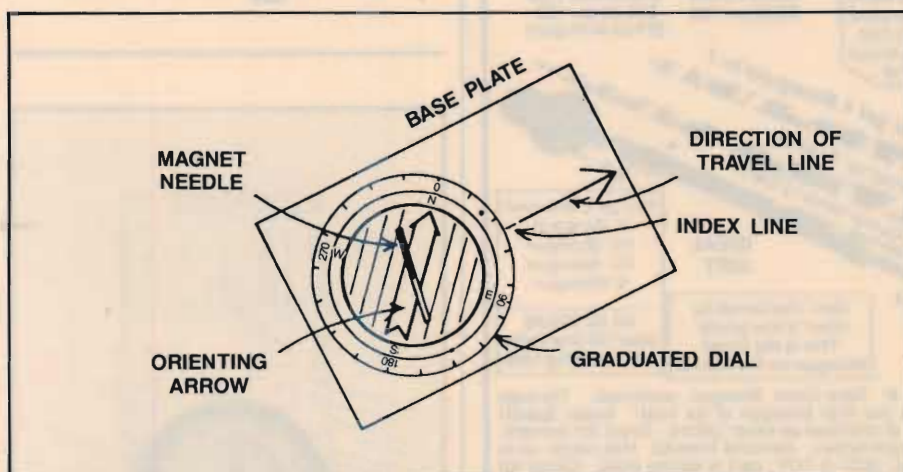


A clear base plate helps you see more of the map through the compass.

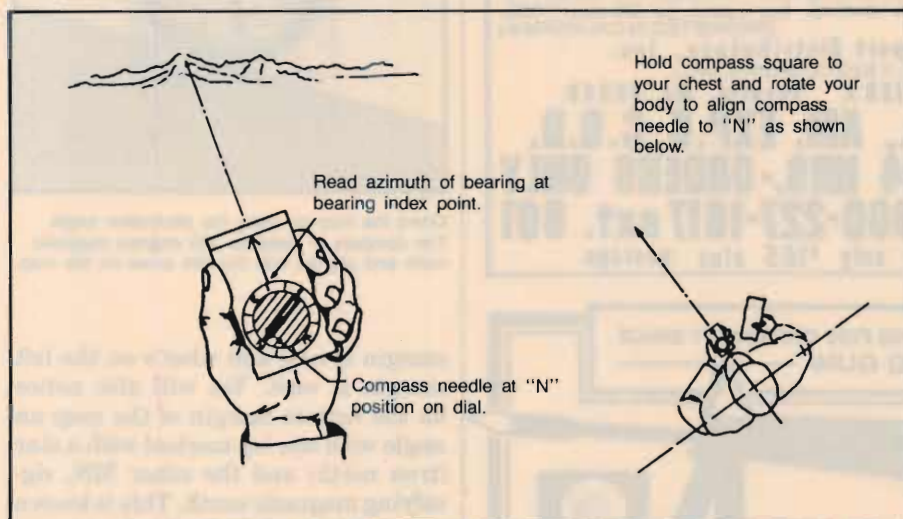


Plot bearings from distant landmarks to determine exact position.

Land Navigation



Essential features of a mountaineering compass.



Taking a bearing on a distant landmark.

mine your position by finding landmarks around you and locating these on the topo map.

Before you can align the landmarks to the map symbols the map needs to be facing the right direction. This is called "orienting the map" and will be discussed later in the article. Finding out which way to align your map can be done with natural means or with a good compass.

Finding direction at night can be done by locating the north star (Polaris). By lining up the last two stars of the cup of the big dipper, you can trace an imaginary line to the north star. On a recent desert trip to hunt jack rabbits we had lost our sense of direction from constantly turning and chasing these long eared critters. Everyone in the Jeep swore that north was the opposite direction I was pointing

until we all stopped and searched for the big dipper. Sure enough — north was the other way even though our gut instincts said it was in the opposite direction.

During the day the sun can easily show you direction. Find a straight stick and place it vertically in the ground on a fairly level spot where a distinct shadow will be cast. Mark the shadow tip with a stone. This is your western rock. Now wait 10 to 15 minutes until the shadow tip moves a few inches. Mark the new position of the tip with another stone like the first. Now draw a line straight through the two marks. This line you have drawn is an East-West line. The second stone mark is the east side. By drawing a perpendicular line through your east-west line you will have a north-south line.

A compass is by far the easiest way to determine direction. It works on the principle of magnetism and as long as the magnetized needle is not being affected by other metal objects (ice axes, knives, metal buckles etc.) the needle will align itself with the magnetic field of the earth. This magnetic flow is toward the north magnetic pole located in Canada, some 1,200 miles southeast of the North Pole.

Avoid using the small, inexpensive pocket-watch type compasses. These will do little more than indicate general direction and are inadequate for use with a topographic map.

A compass to be used in wilderness navigation should have the following features: (1) a magnetic needle housed in a liquid filled dial, preferably with a luminous and different colored (usually red) north pointing end; (2) a graduated dial on a rotating housing enabling one to read bearings or set the desired compass course at the index line; (3) a direction of travel line which is a line continuing out from the center of the magnetic needle, through the index line and beyond; (4) within the rotating housing should be an orienting arrow, used to align the dial precisely with the magnetic needle; (5) the base plate needs to have edges parallel with the direction of travel line.

Taking a bearing — A bearing is the direction of a point relative to your position. To take a bearing with your compass, stand looking at a landmark with your body squarely facing it. Hold your compass with the direction of travel arrow pointing directly at the landmark. The compass should be held level so that the needle swings freely. While holding the compass steady with the travel arrow still on target, rotate the compass dial so that the orienting arrow aligns with the red end of the magnetic needle.

Now read the bearing, in degrees, from the compass by looking at the index line. The bearing is read from the graduated dial at the index line. For example, a bearing could be read as 175 degrees MN (magnetic north).

When you place a topographic map out before you with the reading matter right side up, you can be certain that the top of the map is north and the bottom is south. As you look at the map from this position, the right

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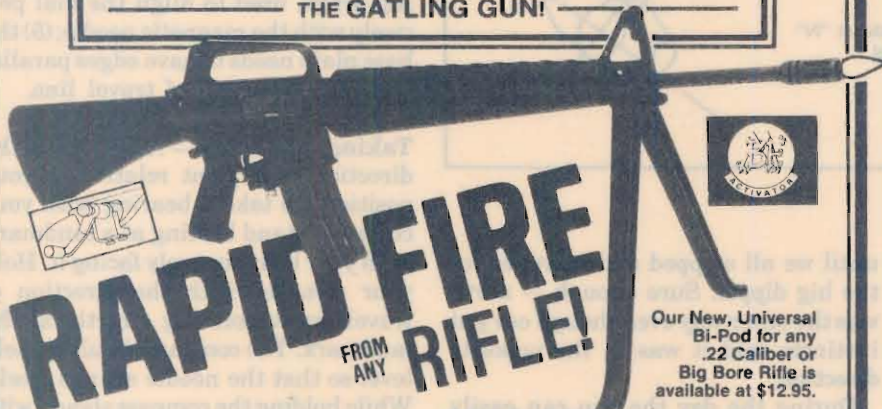
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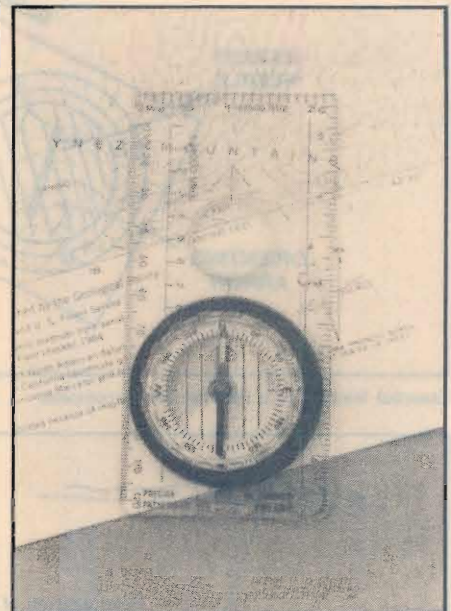
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Land Navigation



Orient the map by using the declination angle. The compass is dialled to 360 degrees magnetic north and aligned with the MN arrow on the map.

margin is east and what's on the left margin is west. You will also notice on the bottom margin of the map an angle with one leg marked with a star (true north) and the other MN, signifying magnetic north. This is known as the angle of declination.

Because the compass needle aligns itself with the north magnetic pole located in Canada, the difference between true north and magnetic north is given on all topographic maps as an angle with magnetic north either being to the right or to the left of true north depending on your location. A person residing in Maine would have a declination of 20 degrees west while in parts of Utah, Nevada, and Montana maps will show a magnetic declination of 15 degrees east.

Orienting a Map -- To position a map so that it aligns up exactly with True North is important when trying to identify terrain features. Simply take your compass and set the dial to 360 degrees North. Place the edge of the base plate along the leg of the declination angle marked MN. Now without touching the compass, rotate

Continued on page 69



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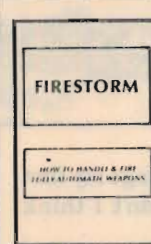
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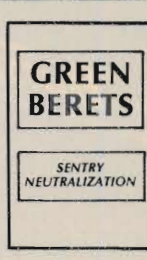
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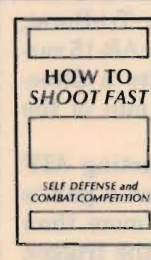


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The Tri-Burst is a legal three-shot burst device for assault rifles...

By Chris A. Choat



UPON opening the package my first thought was, why didn't I think of this?

What I am referring to is a device called the Tri-Burst. The Tri-Burst, when placed on an AR-15 or AR-15 variant, allows the gun to fire a three-shot burst with a single pull of the trigger.

Now before you start quoting ATF laws and rulings about how a gun is a machine gun if it fires more than one time for each pull of the trigger, let me explain further.

The Tri-Burst has its own trigger which when pulled pulls the trigger of the gun it's installed on three separate times. In other words one pull of the Tri-Burst trigger fires the gun in a simulated three-shot burst.

Upon seeing the Tri-Burst for the first time you will see how simple a device it is. Also simple looking. I imagine it required a lot of head scratching to finally make it work. And work it does. If your gun fires reliably in the semiauto mode it will work with the Tri-Burst.

Installation of the device is straightforward and requires nothing more than a screwdriver, a punch and an Allen wrench of which the latter is supplied with the kit. I say kit because the Tri-Burst comes with an Allen wrench, two sockethead machine screws with pictures for those of us that don't read

the instructions. Remember, if all else fails read the instructions.

There is also a troubleshooting guide and a copy of a letter from ATF declaring that the Tri-Burst "is not subject to the provisions of the Gun Control Act or the National Firearms Act."

To begin installation you press the trigger guard front detent pin allowing the guard to swivel down and back as if you were using it as a winter trigger.

Then you punch out the back roll pin freeing the trigger guard from the lower receiver.

Using the supplied self-tapping screw you thread the front trigger guard detent hole. When I first read this in the instructions I had some reserva-

tions but after it's done you can't even tell it. It does absolutely nothing harmful to the gun.

Once the hole is tapped you set the device into the space left by the trigger guard and secure it using one of the sockethead screws. The kit comes with two sockethead screws so that you can tap one of the back trigger guard holes and use the second screw to secure the device at the rear also. The instructions say that the back screw is not necessary and in testing the unit I found this to be true.

I mounted the Tri-Burst Model A on a Colt AR-15 in 9mm for testing. The ammo used was Winchester USA 115-



grain FMJ which works flawlessly in my gun. Shooting the Tri-Burst was a pleasant surprise. My first pull of the trigger resulted in three empty brass in the air all at the same time.

My next "shot" fire only two shells. I tried again and only two more shots. After some examination I discovered that I wasn't pulling the trigger all the way back to fire the third shot. With a little concentration I was firing three shots every time. After two magazines I was getting bursts that sounded as though they were fired from a full-auto weapon. My son tried it and his three shots were faster than mine.

Groups shot with the Tri-Burst on milpark targets all printed in the A-zone at 25 yards.



One thing that the manual notes is that if you are using a .223 AR-15 use only 30- or 40-round curved mags as the Tri-Burst trigger will contact the back of the 20-round straight mags and will not go far enough forward to fire the first round.

The Tri-Burst Model B is also available for the Mini-14, FAL, M14, AK-47 and other semiauto rifles.

The Tri-Burst is available directly from Orpheus Industries, Inc., Dept. ASG, P.O. Box 1415, Montrose, CO 81402. Retail price is \$49.95. Their phone number is (303) 249-0108. ●



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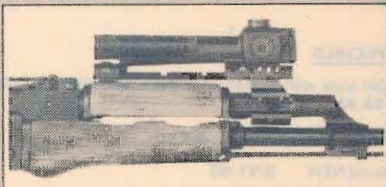
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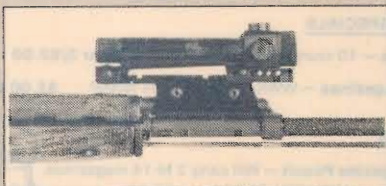
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SKS 56



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Lifetime Wheels

Continued from page 20



The high-maintenance gas hog just might be a liability in an emergency situation.

grading up to the next better piece of gear, such as a 100-amp alternator or a high-cap starter.

Okay. . . you're sitting in the garage with a cold brew, looking at a quarter ton of iron. Now what? That engine is minus several basic things — an ignition system, carburetor, intake manifolds and exhaust headers. Right here, you can improve performance and mileage tremendously by installing custom items from a speed shop or parts house. Specify low end and mid-range performance when you set up, and you'll get an engine that'll breathe much deeper than factory iron. Tell the people at the shop what you're doing, and they'll probably take it as a challenge.

The carb is another option. The make doesn't matter as much as matching the air needs of your engine to the capacity of the carb. All the engine has to have to run is spark, air and fuel. The fuel/air mixture is a variable, depending on whether you're after performance or economy. If you have a V-8 or 6, don't be afraid of a four-barrel, because the primary holes are smaller than a normal two-barrel model. If you keep your foot off the gas pedal, the four-holer can deliver fantastic mileage, keeping those mighty secondaries in reserve. I can remember one '67 Chevy, rebuilt in a barn, that got 20 mpg at sixty with the A/C on, and four large people on board. It can be done.

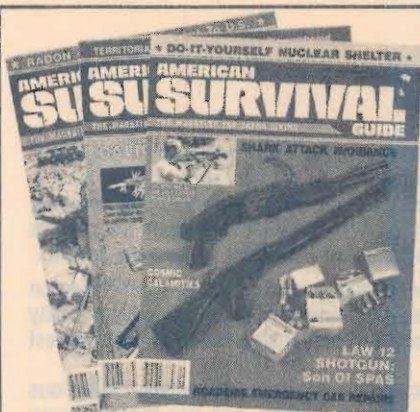
Once the engine's lungs have been selected, the ignition requires some thought. In these days of computerized electronic brains, most shade tree mechanics have hung up their wrenches

and surrendered to Silicon Valley. That doesn't have to be. Just because new cars come out with sophisticated marvels like \$500 electronics packages is no guarantee that the gadgets are any better than old-time equipment.

Once the engine is out of the way, a look has to be taken at the transmission. For my money, an automatic is the only way to go. Granted, you'll get marginally less mileage, but a custom torque converter can eliminate even that problem. The automatic tranny, like the seventies electronic ignition, is a proven concept. Properly maintained, it will outlast the engine. Out in the hills, it allows smoother shifts and gets stuck less. Also, in a survival situation, you may be physically damaged, and not be able to manage a stick shift and clutch.

With the engine and tranny mated up and installed, you've got a brand new car. One that you know as well as your own hands, because they're what put it together. With the body undercoated, and the engine never running much over 2,500 RPMs (55 mph in a V-8), you can be assured of at least 100,000 miles before anything serious goes wrong. I once disassembled a Chrysler marine engine that had gone 3,000 hours — or the equivalent of 120,000 miles — at 2,800 RPM, and the crank was still within factory specs!

You can have one lifetime car, but you'll have to do it the hard way. You should know all there is to know about that particular vehicle. Once you've got it, though, it can be trusted to pull you and yours through almost any hairy situation. ●



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Who uses Katadyn Water Filters? Katadyn Water Filters meet military specifications and are standard issue with NATO and many other armies. They're a staple item with the Swiss Red Cross which stocks them and uses them whenever a natural disaster strikes anywhere in the world—in cases of floods and earthquakes, public water supplies invariably become contaminated and immediate access to safe drinking water quickly becomes critical to the survivors. Dozens of missionary societies all over the world rely on Katadyn Water Filters to keep staffs healthy and functioning. Many of the expeditions to remote areas have relied on Katadyns including most of the major Himalayan ascents.

How does the Katadyn Pocket Filter work? Manufactured in Switzerland for over half a century, Katadyn's Water Filters are based on the proven and simple mechanical principle of microfiltration. The filter element is a microporous ceramic material with an effective porosity smaller than 0.2 microns. It acts as a microfine filter on water forced through it, straining out bacteriological contaminants including the smallest known free living organisms.

All harmful cocci, bacteria, protozoa, fungi, cysts and parasites are totally removed including the chemically resistant infectious agents of *Giardia*, the amoebic and shigella dysenteries, pseudomonas, salmonella, Entamoeba histolytica, naeglaeri, and also those causing typhoid, cholera, bilharzia, schistosoma and a long list of other dangerous diseases. Katadyn Filters also effectively remove nuclear fallout debris and other similar hazardous particles such as asbestos fibers.

Do Katadyn Filters rely on chemicals for their effectiveness? Absolutely not...and this is the most important distinction between Katadyn Pocket Filters and other portable water purifiers you may have seen. Because Katadyn Filters are based on microfiltration, they work equally well on all types of raw water regardless of the temperature or degree of turbidity.

Chemical methods of water disinfection, including both chemicals added to water and all water filters based on chemical disinfection principles involving chlorine or iodine compounds, can be shown to work well under carefully controlled laboratory conditions but will vary greatly in their effectiveness under practical field conditions.

Factors bearing the effectiveness of chemical disinfection methods include the type and concentration of the pathogen, the turbidity of the water including the nature and quantity of the suspended materials, the water temperature and pH (acidity), how much organic matter may be in the water (such as humic acid from decaying vegetation), the contact time between the chemical disinfectant and the pathogens, how vigorously and how long the chemical/water mixture is agitated, what plastics may be present that might react with and consume the chemical and the storage history of the chemical. Is it old, been stored too long and at too high a temperature and hence stale and ineffective?

When purifying water you're going to drink, "99%" or even "99.999%" effectiveness is not enough. In the case of *Giardia lamblia*,* as few as half a dozen ingested cysts can infect you. Badly contaminated water may contain a million cysts or more per liter of raw water.

Microfiltration with Katadyn Water Filters is an absolute method. As long as the filter element is intact, no biological pathogens larger than 0.2 microns can pass through. This is true regardless of the field operating conditions. Neither is there a shelf life problem with Katadyn Filters. Storage life is unlimited as long as you store the filter at temperatures below that might damage the seals.

The ceramic filter is factory impregnated with silver to prevent algae, fungi and bacteria from colonizing the surface of the element and plugging it up. This might otherwise happen if you put a wet and dirty filter away for several weeks after using it. Silver is in no way involved in the filter's purification process.

No chemicals are added to the purified water and none are removed—the water retains its natural mineral content. Neither will seawater or brackish water be made potable as no salts are removed.

What about muddy water with algae in it? Unlike chemical methods, Katadyn Filters **work equally well with turbid water** heavily laden with silt or algae and will **clarify the water** as well as disinfect it. Because of the very large surface and "depth filter" action of the Katadyn microporous ceramic element, you can work with raw water laden with these materials. River guides on the Colorado and Green Rivers use Katadyn Filters on water so muddy you can't see your finger tips if you dip your hand in the water. Even under such conditions plugging is seldom a problem. If you do manage to plug up the filter, full flow can normally be restored simply by wiping off the filter element. Under very difficult conditions, such as water loaded with microfine clays, the top surface of the filter element can be scraped away using the brush included with the filter. This process exposes a fresh, unobstructed surface and can be repeated hundreds of times before you need to replace the ceramic filter element.

Are any consumable supplies needed with Katadyns? Because no chemicals are used, there are no consumable items involved with Katadyn Filters. Even with daily use in very turbid water, a single filter element can be expected to last five years or more. If you were to drop the exposed ceramic filter element on a sharp rock while you had it apart for cleaning, you could crack the ceramic. With reasonable care this should never happen. If you are planning a trip to a remote area or distant country, it would be a good idea to take along a spare filter element.

*The reproductive trophozoite stage of *Giardia* is 9-21 microns in length and 5-15 microns in width. Approximately 8,000 trophozoites can fit on the head of a pin.

"The effectiveness of the filters is stupendous, they are sturdy and fully capable of standing up to extreme situations. In addition, they are easy to operate and to service."

Swiss Red Cross

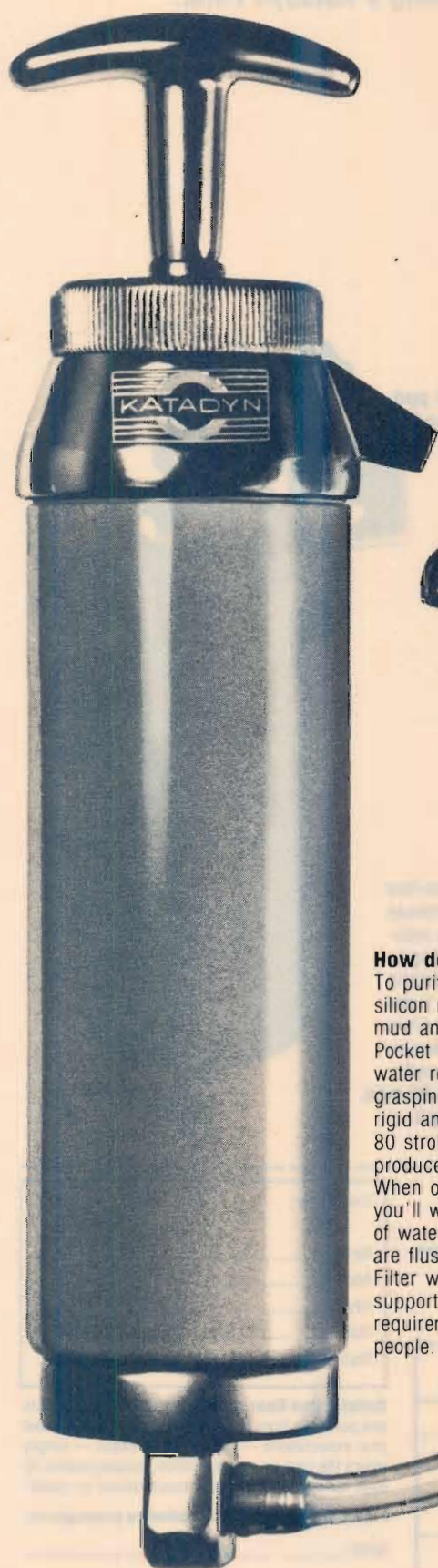
"After two weeks, the only ones in the group that weren't sick were the two of us sharing a Katadyn Pocket Filter. Everybody else begged to borrow it the rest of the trip."
International student group travelling in Africa

"We have taken the Katadyn Pocket Filter pump on the Green and Colorado River in Canyonlands National Park this past season. The filter worked well in the silt laden river."
Expedition leader

"The Katadyn filter pumps are superb and served us well on the Omo River expedition. I can't imagine going on any expedition anywhere in the world outside the Arctic and Antarctic without one. They are a necessity."
National Geographic Omo River Expedition leader

Certificates of the effectiveness of Katadyn Water Filters on file at the factory include:

Swiss Tropical Institute, Basle
University of Zurich
Pasteur Institute, Lille
Harvard University, Cambridge
University of Costa Rica, San Jose
National Institute of Hygiene, Lima
Haffkine Institute, Bombay
Harcourt Butler Institute, Rangoon
Public Health Department, Sydney
Bureau of Health, Manila
Africa Inland Mission, Kampala
Ministry of Health, Cairo
Ross Institute of Tropical Medicine, London
EPA Registration #39444-1



How is the Pocket Filter constructed?

The Katadyn Pocket Filter consists of the ceramic filter element hermetically sealed to protect the "clean side" of the filter, a built-in hand pump to easily develop the 50 psi pressure needed to maintain good flow rates through the very fine pores of the filter, a protective housing, a base fitting with check valves to route the water flow and a silicon intake hose with a coarse particle strainer.

Basically, the Pocket Filter contains three concentric chambers. The outermost chamber is the "raw water" cavity and the surface of the ceramic filter you see when you remove the outer case is the "dirty" side of the filter element. In the center of the filter is a pump cylinder with a reciprocating piston connected to the pump handle. The pump sucks raw water into the cylinder through a check valve on the upstroke, and then on the downstroke routes the water through a second check valve to the outermost chamber. Here the raw water is forced into the surface of the ceramic filter, through the body thickness of the ceramic filter and into a hidden inner "clean water" chamber.

What kind of routine maintenance is required for Katadyn Pocket Filters?

After using the filter and before storing it, remove the protective shell, wash off the ceramic filter element and allow it to air-dry thoroughly before reassembling it. The drying process is completed in 12 to 24 hours depending on the ambient temperature and humidity. Daily use does not require the drying process, but should the filter use be suspended for more than two days, the element should be dried. You'll want to lubricate the pump piston O-ring occasionally with vaseline.

Soap, abrasives or antiseptics should not be used to clean the ceramic filter element. The ceramic element should never be steamed nor used with hot water or the seals will be damaged.

How does the Katadyn Pocket Filter operate?

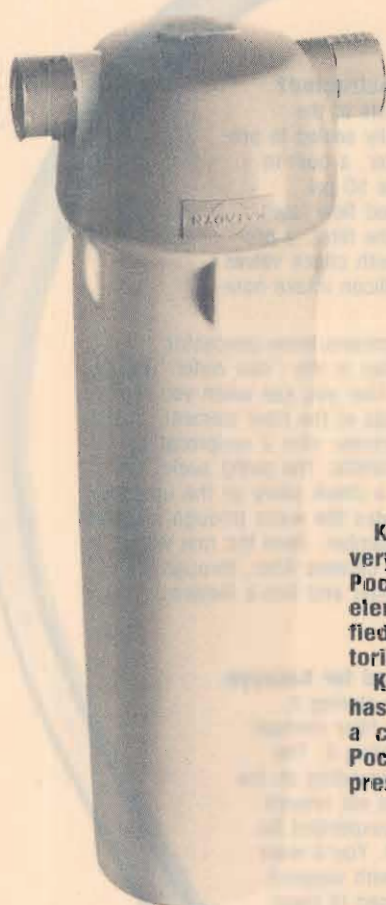
To purify water, simply place the metal strainer end of the silicon rubber intake hose into the water source out of the mud and sedimentary silt. Place the lower end of the Pocket Filter upon the ground and position the clean water receptacle beneath the output spout. By grasping the pump handle, keeping the forearm rigid and pumping steadily at a rate of about 80 strokes per minute, the average person may produce one quart of water every 90 seconds. When operating the filter for the first time, you'll want to discard the first quart or so of water until any loose ceramic particles are flushed out. One Katadyn Pocket Filter will easily and conveniently support the drinking water requirements of several people.

Very light and compact, only 10" long and 2" diameter—the Pocket Filter weighs only 23 ounces including protective zippered carrying case, filter element cleaning brush, gauge and extra O-ring.

PF—Katadyn Pocket Filter. #3010. \$175.00 ppd.
PFE—Spare Filter Element. #3020. \$87.50 ppd.
Field Maintenance Kit. #3050. \$5.00 ppd.

EPA Registration #39444-1

The look and taste of water, however clear and fresh it may seem, can be deceiving. Only reliably purified water is hygienic and safe. Even boiling guarantees only limited protection. Protect your family and pets from dangerous water-borne diseases by installing a Katadyn Filter.



Katadyn In-Line Filter

The In-Line Filter is designed to be installed under the sink and will supply half a gallon of cold water per minute through one tap at a maximum allowable pressure of 88 psi. The filter housing is constructed of high quality plastic and holds one No. 4 filter element (included). For cleaning purposes the housing is removed by unscrewing it counter-clockwise. The In-Line Filter can be installed in any position using the 1/2" gas thread connections at the base of the unit. Height: 13 inches. Weight: 4 pounds.

HFSK—Katadyn In-Line Filter. #6010. \$140.00 ppd.
Spare No. 4 Filter Element. #10010. \$60.00 ppd.

Katadyn Products Ltd. of Switzerland makes a very broad line of water purifiers from the small Pocket Filter to very large units with many filter elements in parallel which can supply all the purified water needs of beverage companies, laboratories and hospitals.

Katadyn's ceramic microporous filter technology has been in continuous production for over a half a century with over 1,000,000 filters sold. The Pocket Filter has been manufactured and sold in its present configuration for over twenty-five years.

Katadyn Household Filter

The Household Filter is designed to be plumbed in-line and will produce 2 1/2 gallons of cold water per minute through three No. 4 filter elements (included) at a maximum allowable pressure of 88 psi. The filter housing is constructed of a high quality aluminum alloy that is plastic coated for durability and easy maintenance. The 1/2" gas thread outlets are located at the top of the filter with a drain tap underneath. Includes mounting bracket and hardware. Height: 21 inches. Width: 8 inches. Weight: 22 pounds.

MF-3—Katadyn Household Filter. #7010. \$750.00 ppd.
Spare No. 4 Filter Element. #10010. \$60.00 ppd.



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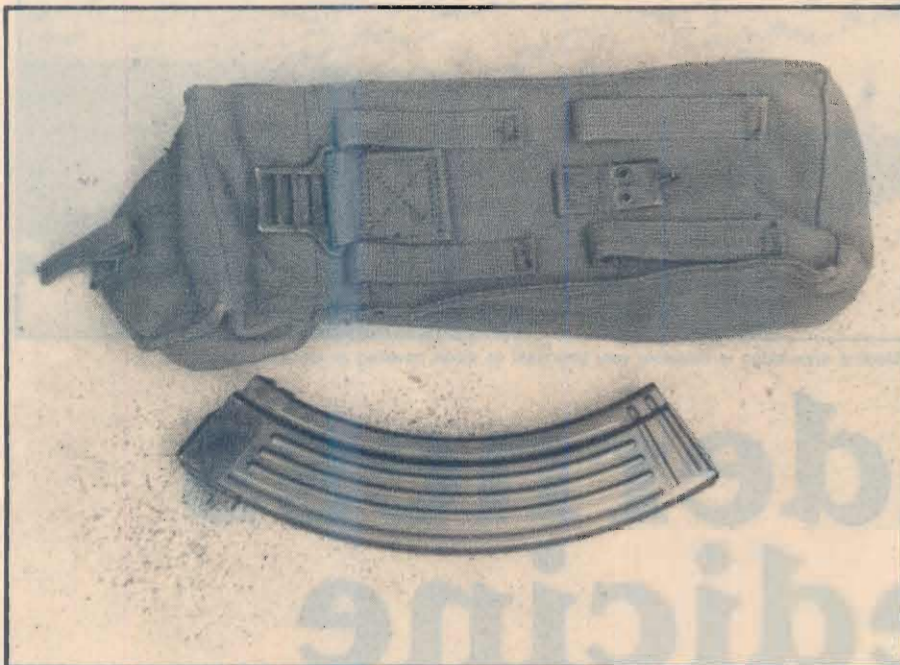
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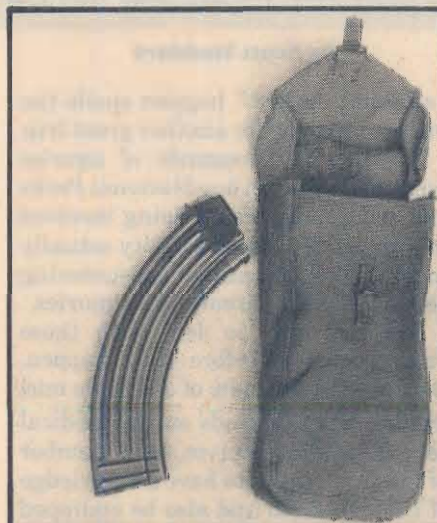


Staff Report

SIERRA Supply has a genuine East Bloc issue 40-round AK-47 magazine pouch for sale.

It will hold three 40-round banana AK magazines and can be carried from a large variety of belts. There are two sets of loops on the back that will accommodate belts up to 3½-inches wide. Made of heavy duty OD canvas with protective top flap that fastens closed.

These new issue pouches are \$9.95 each postpaid or two for \$18 postpaid continental U.S. or \$12 each postpaid to Alaska, Hawaii and Canada from Sierra Supply, Dept. ASG, P.O. Box 1390, Durango, CO 81302; (303) 259-1822. ●



KATADYN POCKET FILTER



The Katadyn Pocket Filter is a Swiss-made device that **clarifies** raw water and **instantly removes all harmful cocci, bacteria, protozoa, fungi, cysts** including **Giardia** and **parasites** by microfiltration through a 0.2 micron microporous ceramic filter element. **No chemicals** are added or removed. A silver lining fixed to the inside of the ceramic element prevents the growth of algae or bacteria into the surface, keeping it free from contamination. Will operate many years with daily use. Full flow is quickly restored by wiping or brushing off the filter element and can be repeated hundreds of times before replacement is necessary.

The Pocket Filter is standard issue with the International Red Cross and NATO. Essential equipment for backpackers, globetrotters and survival kits. Built-in pump produces 1 quart/minute of safe drinking water. Includes carrying case, cleaning brush and instructions. 10" long, 2" diameter, 23 ounces. Full money-back guarantee.



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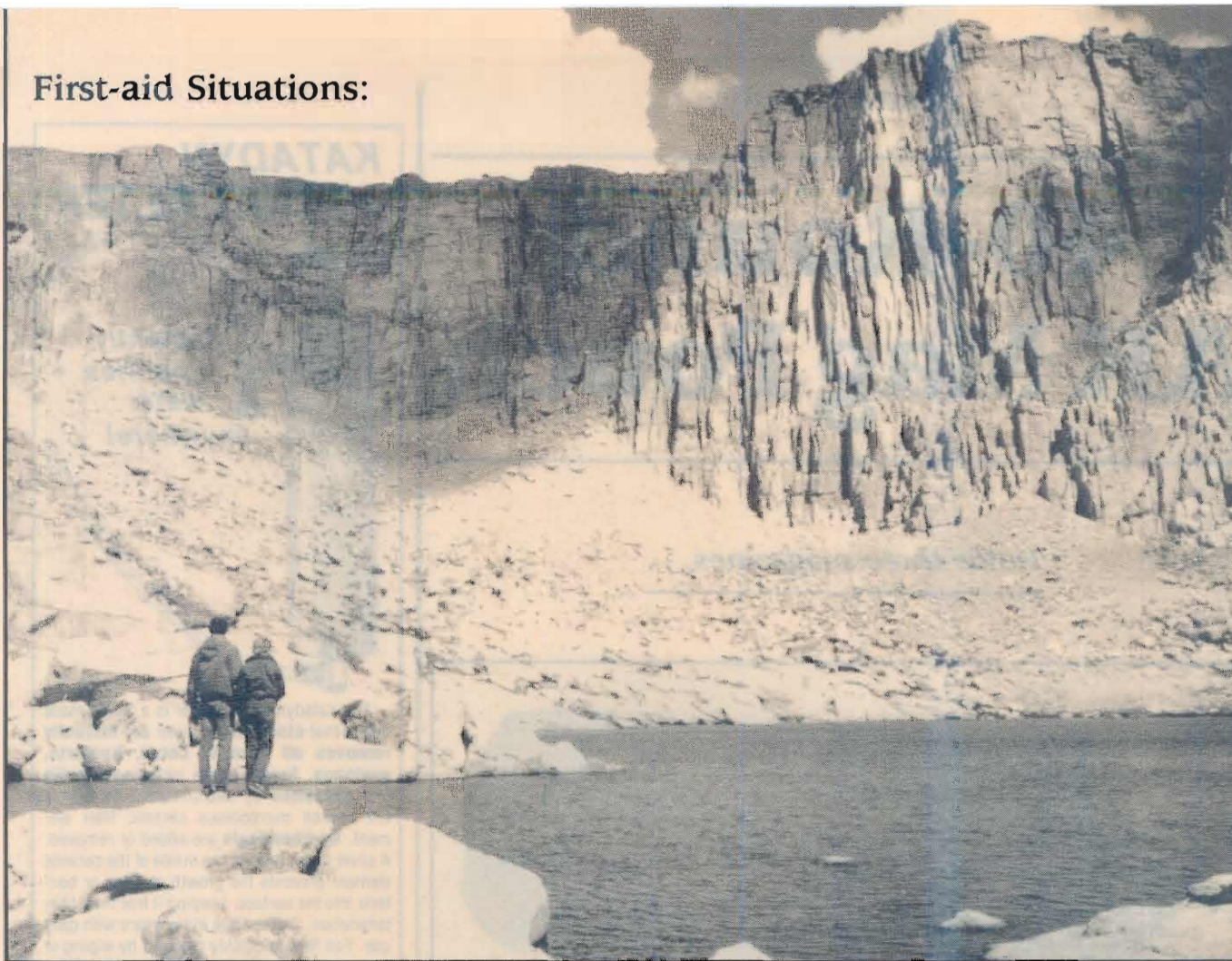
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First-aid Situations:



Above timberline the forces of nature can be extreme. Medical knowledge is therefore very important to those traveling in remote areas.

Wilderness Medicine

When you can't call the doctor. . .

by Scott Stoddard

PLANNING AN excursion into the wilderness can be the most exciting part of a trip. Whether it be a skiing vacation, a few days of deer hunting, or an extended week-long trek through the wilderness, you think and plan for the good times ahead and seldom consider the possibility of a serious medical emergency.

In most cases you'll include a few first aid supplies with your equipment, "to be on the safe side" but getting sick or hurt while out on your adventure isn't a great concern. Besides, thinking about what "might" go wrong

and what "might" happen spoils the fun of preparing for another great trip.

The fact is, thousands of injuries occur each year in our National Parks and wilderness areas. Being involved in a rigorous outdoor activity actually increases your chances of encountering certain health threats and injuries.

The best way to deal with these emergencies is before they happen. Because the outcome of a serious misfortune often depends on the medical care the victim receives, each member of the group needs to have a knowledge of basic first-aid and also be equipped

with the tools to treat a victim in a serious situation.

When an incident occurs at a considerable distance from a physician or hospital, ordinary first-aid may not be adequate for the victim to recover without permanent disability. Red Cross courses on CPR and first-aid are a must. Advanced classes on wilderness emergencies should be taken if a physician will not be part of your group. (Check the list of first-aid/medical books and suggestions for first-aid kits at the end of this article)

One of the best ways to prepare for

an outing is to start with a strong healthy body. A sick person begins the trip with limited endurance and a reduced ability of getting well should something happen to further injure his health. Be smart and stay home if you're not in prime condition.

Blisters — while not generally a serious condition, blisters on the feet can become a debilitating nuisance.

On a recent backpacking trip I wore a pair of new hiking boots that were not sufficiently broken-in. When my heels started to burn after five miles of rough trail, I applied moleskin and continued hiking. That night I made the mistake of ripping off the moleskin to see how big the blisters were. I ended up tearing off my skin along with the moleskin, leaving a raw oozing wound too painful to even walk.

A fellow hiker had brought along a new kind of gel called Spenco 2nd Skin, which acts to remove the friction that irritates blisters while at the same time cleaning, soothing and deodorizing the sore, thereby promoting the healing process. I found that I could continue on with the hike, and that by the end of the trip the blister was almost healed!

Spenco 2nd Skin has revolutionized the field treatment of 1st, 2nd, and 3rd degree burns. It can be applied to all three as a perfect sterile covering and for pain relief. This inert hydrogel consists of 96-percent water and 4-percent polyethylene oxide. It cleans and deodorizes wounds by absorbing blood, serum, or pus. The cooling affect it generates increases pain relief. Look for "2nd Skin" in athletic supply and drug stores.



ABOVE — Blisters can be treated with a new product called Spenco 2nd Skin.



LEFT — A backpack's extra weight can make a simple slip on the trail become something more serious.



LEFT — Stream and river crossings can be treacherous. A fall into the stream could result in hypothermia, broken bones, or even drowning. BELOW — A simple first-aid kit can fit into a fishing bag worn on the belt when taking side trips from base camps.

Hypothermia — Mountains create weather just by being mountains. A beautiful sunny day in August can suddenly turn into a winter scene with snow fall, wind and rain. Hypothermia, the lowering of body core temperature, is definitely a threat in the wilderness environment. Dampness and wind are the main factors creating this potential danger.

On the morning of May 12, 1986, a party of 20 from the Oregon Episcopal School left Timberline lodge at the base of Mount Hood, Oregon, for a summit attempt. The weather two days prior to the climb had been unsettled, and there had been new snowfall. Rain and more snow had been predicted, but a decision was made to go anyway.

After about 45 minutes two members of the group decided to turn back after trudging through calf-deep snow in the windy, cold and unstable conditions. Later on, three more ended up turning back while the rest continued up with much difficulty. The sunny weather began to change, and various members were becoming hypothermic. Finally the group decided to turn back. As they tried to make their way down, white-out conditions were experienced and a snow cave was hurriedly built. The cave was not sufficiently large enough and after a while the shovel was lost. When rescue teams finally arrived two days later, nine had succumbed to the extreme conditions. While the snow cave had provided them some protection, they had no means to rewarm themselves once hypothermia had set in.

When the body begins to lose warmth, blood vessels clamp down and blood is

conserved around an inner core. Immediate rewarming is necessary to save the person from frostbite and eventual death. Shelter from the elements is the first concern, whether it be a snow cave, tent or cabin. After removing their wet clothes, get the victim into an adequate sleeping bag with another person. The second person is necessary because the victim alone cannot generate the heat necessary to warm the bag. Because energy reserves have been used up, both food and liquids are needed to restore heat producing calories.

Acute Mountain Sickness — A 30 year old salesman from the San Francisco bay area was an avid skier, and during the winter season spent nearly every weekend in the Lake Tahoe area. A late snowfall in May enticed him to drive to Mammoth Lakes (elevation 8,000 ft.) for the Memorial Day weekend and ski Mammoth Mountain.

After two days of skiing Mammoth (elevation 11,000 ft.) and sleeping in town at elevation 8,000, he developed increasing shortness of breath, fatigue,

and weakness. He continued to ski even though he could barely climb up to the loading ramp to get on the chairlift. That night he developed a cough and more intense shortness of breath, along with gurgling sounds in his chest.

Early the next morning he was coughing up blood and called for a doctor. The doctor gave him an injection of penicillin and advised him to drive home. The family physician back home ordered a chest x-ray and found fluid present in the lower portions of both lungs. Hospitalization was required and after four days of oxygen treatment he was discharged.

High altitude pulmonary edema (HAPE) is an extreme form of altitude sickness that results from a rapid gain in elevation without proper time to acclimatize. Symptoms soon after ascent consist of headache, nausea, vomiting, shortness of breath, weakness and sleep disturbance.

The best thing to do when altitude sickness occurs is to immediately go down to a lower elevation, the lower the better. To prevent acute mountain sickness it is best to acclimatize by



MEDICINE

Non-prescription products are included in the Topical Bandaging Unit and the Non-Rx Oral Medication Unit of William Forgey's Wilderness Expedition Medical Kit.



making a gradual ascent above 9,000 feet and only perform light physical activity for the first several days. It also helps to sleep at the lowest campsite possible.

Bleeding — The care of wounds and lacerations can be broken down into three main phases. The first phase is to **SAVE** the victim's **LIFE**. The average adult has in his entire body about six quarts of blood. The loss of one-sixth of the total volume, or one quart, is considered dangerous. Also the rapid loss of blood is more dangerous than a slow, steady loss.

Direct pressure on the bleeding wound, even with a bare hand when massive bleeding occurs, will control hemorrhaging. Besides controlling the bleeding you'll need to also treat for shock. With not enough oxygenated blood getting to the brain, you should lay the patient down and elevate the feet above the head unless they have a head or chest wound. Make sure they are protected from the cold ground or atmosphere.

Once the bleeding is controlled and

the person has been treated for shock, the next phase in wound care is **CLEANING** the wound. The prevention of infection, especially in an isolated or survival situation, is extremely important. Be aggressive and use lots of water. Scrub away all the dirt and debris you can, any blood clot, torn bits of tissue, or foreign matter. All of this stuff generally results in higher bacteria counts or foci for bacterial growth.

Be ready with clean, dry dressings. The vigorous scrubbing will loosen blood clots and bleeding will start up again. Apply direct pressure again and it will usually stop in five to ten minutes.

The third phase is **WOUND CLOSURE**. Butterfly bandages will usually work quite well. Two commercial products are available that allow the wound to drain more freely. Try the Steri-Strip by the 3-M Corp. or the Cover-Strip by Beiersdorf, Inc. If taping won't keep the wound closed you're going to have to stitch it closed. For information on suture materials and techniques, the book *Wilderness Medicine*, by William Forgey, has a good surgical kit list and

illustrations on sewing up a wound.

When a wound does become infected, the wound should be left open to promote cleansing and drainage of infection. In primitive conditions, deep open wounds will frequently become infested with maggots. The natural tendency is to remove these maggots, but actually, they do a good job of cleansing a wound by removing dead tissue. When they begin to affect healthy tissue, the victim will experience an increased level of pain as the maggots come in contact with live nerves. Bright red blood will also signal that they have reached healthy tissue. Flush the wound repeatedly with large amounts of sterile water to remove them.

Wilderness medical care would be nothing without one vital addition to every emergency kit. The ability to rationally analyze a problem, and then calmly find a solution to that problem, is a rare talent sometimes known as "common sense." Whereas a little bit of knowledge can be dangerous, a thorough acquaintance of first-aid principles combined with common sense might make the difference between survival and death.

William Forgey, M.D., author of *Wilderness Medicine*, has recommended an emergency medical kit that is packaged as six separate modules. This modular design allows for flexibility and reduces bulk when trip length or distance from home is small. For example, on a day hike to a nearby park you probably wouldn't need the Field Surgical Unit, whereas on an extended excursion into a remote mountain range, you would want to bring all six modules.

Continued on page 63

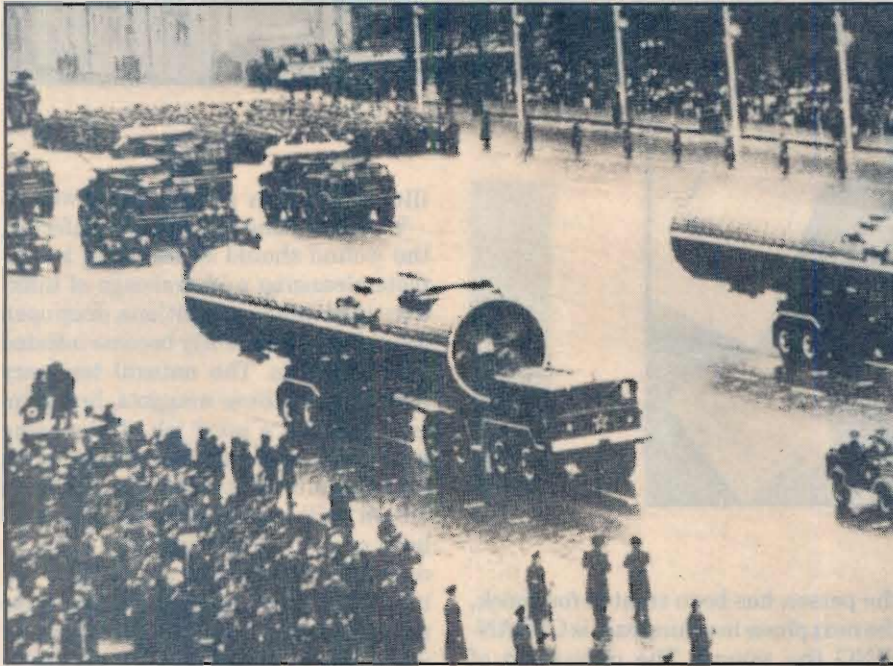
The Other SDI:

Soviet Star Wars

'The Soviet Union is doing all that the U.S. is doing. . . we are engaged in research which relates to those aspects covered by SDI in the U.S.' . .

By Michael Pietrantonio

ILLUSTRATIONS COURTESY OF DEPARTMENT OF DEFENSE



The GALOSH missile displayed in Moscow.

IN October of 1987, just before the Reagan-Gorbachev summit, the Soviet Union conducted an ICBM test which targeted two dummy nuclear warheads to a landing within 600 miles of the coast of Hawaii.

That test, while perhaps indicative of true Soviet policy, is not, however, the most notable part of the incident. That distinction rests with the temporary blinding of an American female pilot by a laser fired from a Soviet ship at the reconnaissance plane in which she flew.

This incident, while downplayed by both the press and the Pentagon, illustrates what the CIA has called "ominous" developments in the Soviet effort to create their own Strategic Defense Initiative. There are now predictions by those within U.S. defense, scientific, and intelligence circles, that the Soviets are within five years of being able to

deploy an effective "star wars" anti-missile system. Such a system, again quoting a CIA report, would have, "awesomely negative implications" for U.S. security.

While the U.S. Congress continues to hobble President Reagan's SDI program, the Soviets proceed to design, test, and deploy elements of their own SDI. Their program employs 10,000 scientists, engineers, and researchers, and has been underway for more than 20 years. There are now indications that their decades-long effort might soon pay off.

To understand Soviet perceptions of, and commitment to, ballistic missile defenses (BMD), it is useful to examine Soviet views of nuclear conflict.

Basic Soviet military doctrine does not advocate nuclear war. However it does recognize the very real possibility that events in a crisis might lead to nuclear confrontation. The absolute

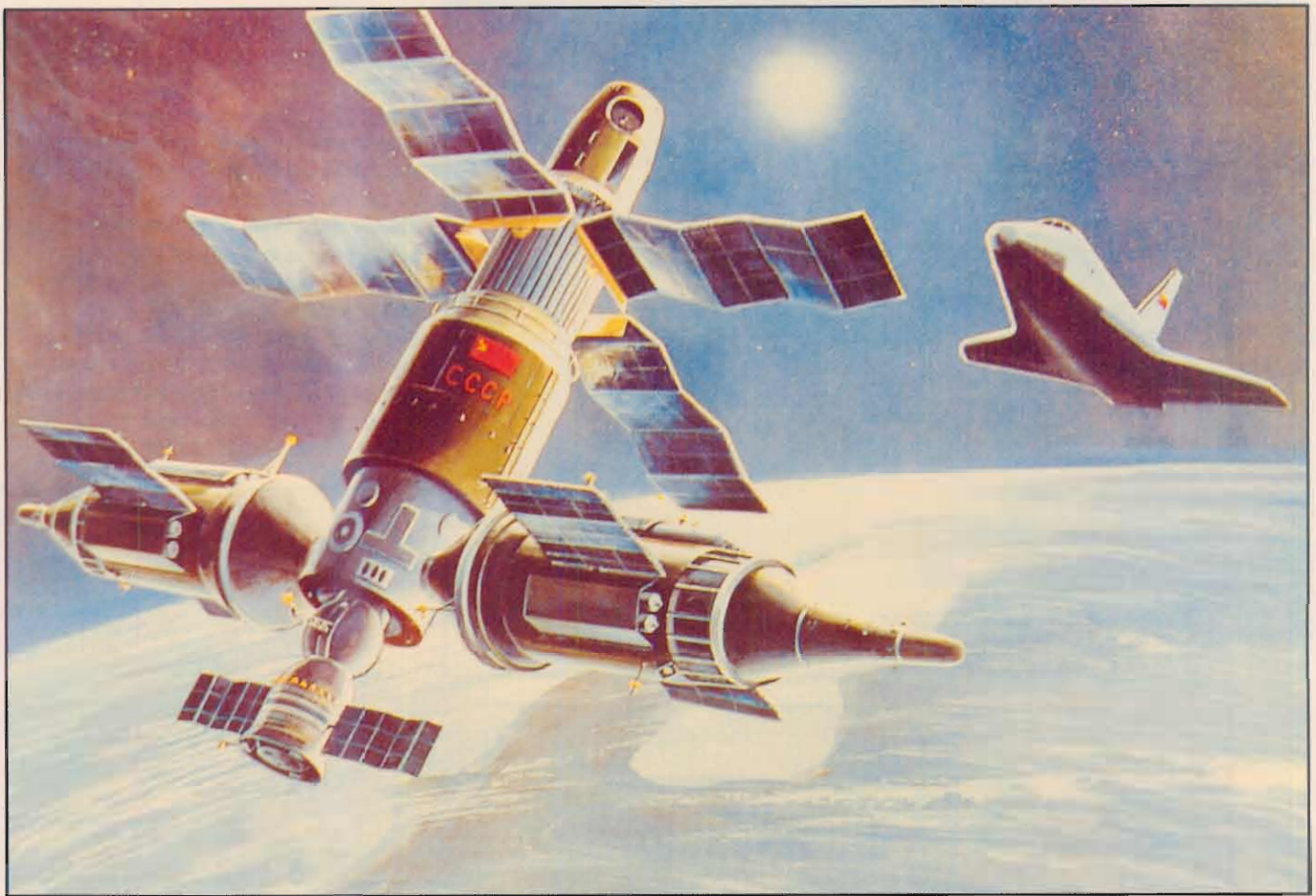
underlying foundation of Soviet nuclear strategy is that, should a nuclear confrontation become inevitable, the Soviet Union must be prepared to fight and win such a confrontation. To that end the Soviets are prepared to launch, and have structured their forces for, a nuclear first strike. The goal of such a strike would be to neutralize, as far as possible, the retaliatory ability of the U.S. Since it would be virtually impossible to destroy the entire retaliatory capacity of the U.S. in a first strike, the Soviets have sought to minimize the damages that would be incurred in a U.S. retaliatory strike. To that end Soviet planners have created a three-tier system of active and passive missile defense measures.

First air defense forces. The devastation suffered by the Soviets in World War II resulted in the creation of a separate military branch dedicated to defense of the Russian motherland against attacks from the air. This branch, known as PVO Strany, is responsible for all aspects of air, anti-satellite, and ballistic missile defense in the Soviet Union. The organization has an estimated 635,000 people under its command, and is considered a vital part of the Soviet military machine.

Second, civil defense. Despite the almost complete absence of civil defense efforts in the West, the Soviets have continued to upgrade and modernize their own civil defense program. They now possess an effective shelter and relocation system for both their leaders and civilian populations. Civil defense is controlled by a major independent department within the Soviet military.

Third, research. Since the end of WWII the Soviets have had a continuous series of research and development programs aimed at developing advanced technologies for defense against ballistic missiles.

In 1960 an American U2 reconnais-



ABOVE — The Soviets will soon be launching a space shuttle of their own. Ninety percent of all Soviet space activity is military in nature.



Artist's conception of a GALOSH anti-ballistic missile being fired at an incoming U.S. ICBM.

sance flight flew over the region of Sary Shagan in Soviet Central Asia. The photos brought back from that flight were a shock to the U.S. military establishment. They showed a massive installation dedicated to research and testing of BMD components. Also seen

were new radars and the initial elements of what was later to become the world's only deployed anti-ballistic missile (ABM) system. That system is currently operating around Moscow. As will be seen later, the Sary Shagan site continued to play a key role in Soviet BMD research efforts.

The Soviet concept of BMD is practical. Their planners understand that no system can be 100 percent effective, but that it is better to have a less than perfect defense than no defense at all.

BMD, along with its offshoots, civil defense, air defense, etc., is incorporated into overall Soviet military planning. It is not, as it is in the U.S., an isolated part of the military establishment.

In 1962 Marshall V.D. Sokolovsky wrote in *Military Strategy* that the aim of Soviet strategic defense was "the task of creating an invincible system for the defense of the entire country. . . . While in the last war, it was sufficient to destroy 15-20 percent of the attacking air operation, now it is necessary to assure, essentially, 100 percent destruction of all attacking airplanes and missiles."

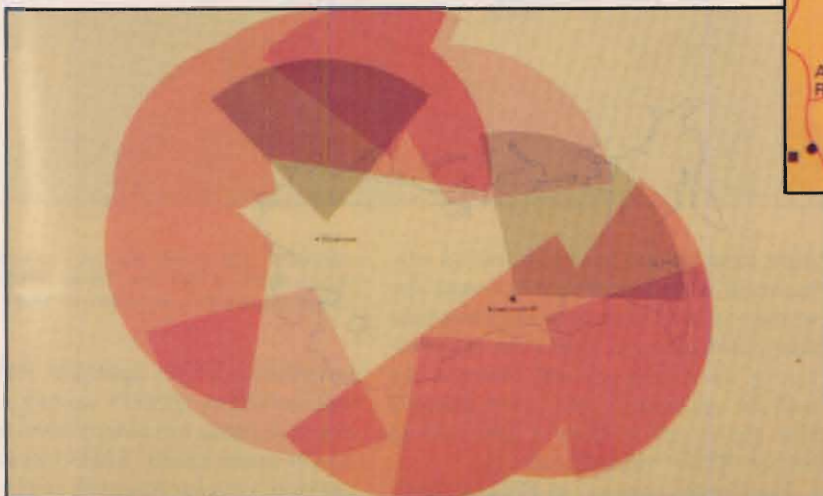
The past 25 years have seen the theories of this strategic defense doctrine

transformed into operable BMD and anti-satellite (ASAT) weapons. Even more ominous are recent developments in the more exotic BMD technologies currently under research in the Soviet Union.

Operational Systems — The Soviet Union is currently the only country in the world with an operational anti-ballistic missile (ABM) system. Under terms of the 1972 ABM treaty both sides were allowed to deploy two ABM systems around two separate locations. The treaty was later amended to allow only one system around one potential target. The U.S. chose not to deploy its one permitted ABM system. On the other hand the Soviets not only deployed their system but in the years since the signing of the ABM treaty have continuously upgraded and modernized that system.

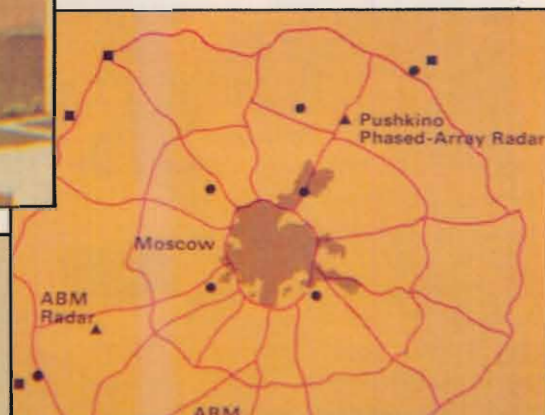
The ABM system which surrounds Moscow (known as the GALOSH system) consists of four batteries of above ground launchers. Initially these reloadable launchers could fire 64 nuclear-

The Pushkino phased array radar complex just north of Moscow, which is part of the Moscow ABM system.



non-broken arc of coverage from the Kola Peninsula to the Caucasus.

What makes this system so worrisome to U.S. defense planners is that it appears to be intended, contrary to the ABM treaty, to assume a BMD battle management role. The ABM treaty allows this type of radar only on the perimeter of a country and then only if it is oriented outward, so as to be able to function solely in an early warning role. The Krasnoyarsk PAR complex was built deep within Soviet territory and has little use as an early warning radar but could be of great value as an ABM radar.



ABOVE — The world's only operational ballistic missile defense system is deployed around Moscow.

LEFT — The Soviet's have the world's most extensive radar system which provides an early warning and target-tracking capability for the USSR.

tipped GALOSH missiles. Recent upgrades to the system have now brought it to the maximum 100 launchers allowed under the ABM treaty. The 36 new launchers are silo based and are part of a second layer, longer-range ABM system. This system uses super-high acceleration SH4 or SH8 interceptor missiles.

Additionally, the Soviets have also modernized the radars which feed guidance information to the Moscow ABM system. Each launcher complex contains six TRY ADD guidance and engagement radars. There are two target tracking radars south of Moscow, (DOG HOUSE and CAT HOUSE), and the newly completed Pushkino phased array battle management radar north of Moscow. All of these elements are tied into a massive coordinated network of long-range radars which are located on

the periphery of the Soviet Union.

Besides having the only operational ABM system in the world, the Soviets also possess the most extensive early warning system of any nation on earth.

There are some 7,000 radars located on 1,200 sites throughout the Soviet Union. These radars are almost exclusively dedicated to an air defense role. They are designed primarily to warn of and track incoming aircraft or cruise missiles.

Far more worrisome than the air defense radars is the soon to be completed phased array system of early warning and tracking radars. Phased array radars scan the sky in all directions using computerized switching systems which do away with the familiar rotating radar dish.

The Soviet phased array (PAR) system contains six radars which form a

Civil Defense — Soviet Colonel N.I. Basov has written, "Today without civil defense it is impossible to withstand the rigorous trials which are inevitable with enemy use of nuclear-warhead missiles... it is impossible without civil defense to protect the population and the nation's economy. Civil defense is becoming a strategic factor which is of substantial determining influence on the course and outcome of a modern war, as well as on the post war restoration of the economy."

Soviet civil defense planning plays a key role in the civilian, military, and economic spheres of Soviet society. As noted earlier Soviet planners acknowledge that no BMD system can be 100 percent effective. It is the role of civil defense to minimize the damage caused by those warheads which manage to leak through the BMD system.

In the past 30 years the Soviets have spent between \$28 and \$56 billion on construction and equipment for their civil defense program. There are at

least 1,500 hardened facilities containing space for 175,000 key personnel, throughout the Soviet Union. These numbers do not include purely military facilities such as command and control or communications bunkers.

Heavy industrial and other key economic plants have blast shelters on site for use by the workforce. Raw materials and machinery for use in wartime production are stored throughout the Soviet Union in hardened underground structures. Extensive sheltering in or near urban areas provides blast and fallout protection for much of the general population. Evacuation procedures have been worked out to rapidly disperse populations.

As many as 100,000 members of the Soviet armed forces are assigned to work full time in coordinating and implementing civil defense efforts in the USSR.

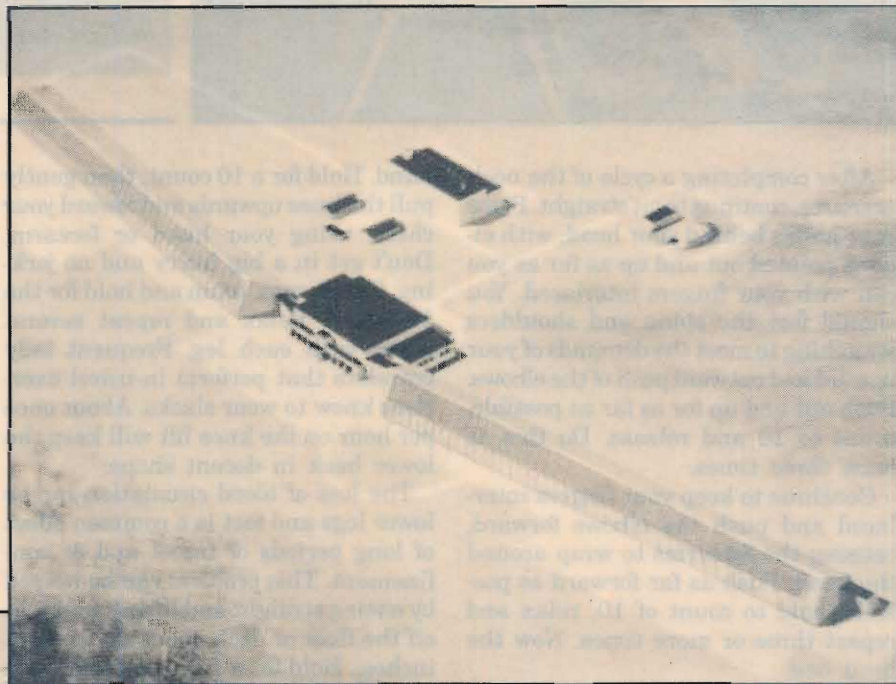
U.S. intelligence analysts estimate that about 90 percent of all Soviet space activity is military in nature. According to James Oberg, author of *Red Star in Orbit*, the Soviets "have been pursuing a space weapons program for 20 years and lying about it. We have to adjust to the fact that they do pretty nasty things in space

the U.S. has stepped up its programs of "hardening" reconnaissance and communications satellites against such attacks.

In early 1987 the Soviets launched the world's mightiest booster rocket, the Energia. This vehicle, as powerful as the now retired U.S. Saturn 5 moon rocket, gives the Soviets the ability to launch into orbit payloads of 100 tons at a time. In comparison the U.S. shut-

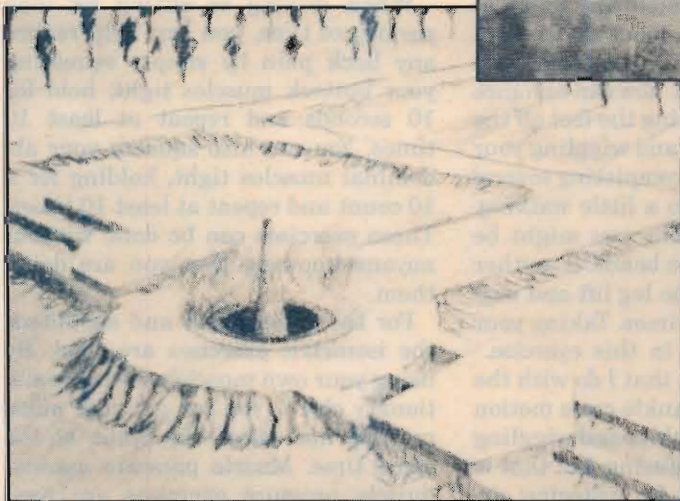
BMD Research, Development — Soviet research into the possibilities of using high powered lasers and other exotic technologies in a BMD role has been going on since the mid 1960s. Much of this work has taken place at the Sary Shagan site mentioned earlier. This site, in a remote and desolate part of the Soviet Union is the development and testing center for PVO Strany.

Ever since the discovery of the Sary



ABOVE — The "HEN HOUSE" ballistic missile early warning radars are placed at six locations on the periphery of the Soviet Union and provide early warning and target-tracking information.

LEFT — Part of the improvements of the Moscow ABM system includes high speed, silo-based interceptor rockets.



Shagan site in 1960 the U.S. has kept a watchful eye on developments at the center. Many of the Soviet advances in BMD technology have come from the researchers at Sary Shagan. It was here that the U.S. first observed the development of radars which gave the Soviets an early warning and BMD capability. The Moscow ABM system was also developed at Sary Shagan.

Today, while traditional methods of BMD continue to be researched at Sary Shagan the bulk of the center's work, and also that of an even larger research center at Dushanbe, seems to be concerned with the development of lasers, particle beams, and radio frequency, (RF) systems, to be used in a BMD role.

Soviet scientists have long been among the leaders in laser research. At the Sary Shagan and Dushanbe complexes efforts to develop lasers suitable for use in a BMD system are well underway. Research on various types of lasers such as the X-ray laser, gas-dynamic laser, electric discharge laser, and chemical laser has progressed to the point where operable laser weapons

(Continued on Page 76)

weapons."

Since 1971 the Soviet Union has had the world's only operational anti-satellite, (ASAT) system. The system, while crude in technical terms, has been tested almost 20 times and has shown itself to be effective. In addition, the U.S. Department of Defense has recently asserted that the Soviets have two ground-based lasers which are currently capable of attacking and "blinding" orbiting satellites. Reports that the Soviets have already done just that have not been confirmed, however

tle can lift 30 tons into orbit.

Soviet cosmonauts have maintained a near continuous manned presence in space over the past decade with a series of seven different orbiting space stations. The latest and most sophisticated of these, the MIR space station, was launched into orbit 23 days after the disaster of the U.S. space shuttle *Challenger*. According to Pentagon officials the MIR "appears to be predominantly military in application." It is known that anti-missile tracking tests have been conducted aboard the MIR.

Confinement Exercises

(Continued from page 25)



The leg lift and knee-to-cheek exercises will aid in low back pain reduction, normally one of the first signs of travel fatigue or shelter confinement. Move slowly but always stretch to the maximum. Breathe normally.

After completing a cycle of the neck exercises, continue to sit straight. Place your hands behind your head, with elbows pointed out and up as far as you can with your fingers interlaced. You should feel the spine and shoulders stretching to meet the demands of your upward and outward push of the elbows. Push out and up for as far as possible, count to 10 and release. Do this at least three times.

Continue to keep your fingers interlaced and push the elbows forward, causing the forearms to wrap around the head. Push as far forward as possible, hold to count of 10, relax and repeat three or more times. Now the hard one.

With the fingers interlaced, hold the elbows as high as possible and slowly move the elbows backwards. You will not be able to move them very far, but once you reach the furthest point, hold the position for a count of 10, relax and do again. Three to five times will do a good job of relaxing your neck, shoulders and upper back. This exercise comes in handy after riding in an open 4x4 all day. Very good relaxer.

The second worst pain for me, when traveling or confined, is the lower back. Probably, this area of the old-bod creates more pain for more people than anywhere else. Long periods of sitting and lack of movement kicks in the low back pain mode very rapidly for a lot of people.

To help reduce the pain in the lower back you must stretch several muscles. Most, if not all, can be stretched safely by performing one exercise. I have seen lots of travelers on aircraft do the leg-lift-to-cheek. It works well for me, and it must do well for others, too.

Sit with your body straight and feet flat on the floor. Lift one leg as far as it will go without assistance from your

hand. Hold for a 10 count, then gently pull the knee upwards and toward your chest, using your hand or forearm. Don't get in a big hurry and no jerking. Pull to maximum and hold for the 10 count. Relax and repeat several times with each leg. Frequent lady travelers that perform in-travel exercises know to wear slacks. About once per hour on the knee lift will keep the lower back in decent shape.

The loss of blood circulation in the lower legs and feet is a common effect of long periods of travel and or confinement. This problem can be helped by sitting straight and lifting your feet off the floor or deck about six to eight inches. Hold for a 10 count, relax and repeat several times. You can enhance the exercise by keeping the feet off the floor while rotating and wiggling your feet and toes. After completing several of the lifts, try to do a little walking. If this is not possible, you might be able to do a few knee bends. If neither is possible, repeat the leg lift and wiggling for additional times. Taking your shoes off will help in this exercise.

Another variation that I do with the leg lift is to add an ankle cross motion while rotating my ankles and wiggling my toes. Sounds confusing, but that is what you do. Great for restoring cir-

culation to a foot that has "gone to sleep." The lift, rotation and wiggle should be done for as many minutes as you can do it. Your circulation, legs and lower back will improve.

Leg crossing is a good exercise that will help lower leg and foot circulation, too. Sit straight with feet flat on the floor. Lift the leg and place the ankle over, but not on the opposite knee. Do not let the ankle touch the knee. Hold for a 10 count, then do the other leg the same way. Five repetitions of this exercise will help the circulation and lower back, too.

When driving or sitting for long periods of time, you can help reduce any back pain by simply squeezing your buttock muscles tight, hold for 10 seconds and repeat at least 10 times. You can also squeeze your abdominal muscles tight, holding for a 10 count and repeat at least 10 times. These exercises can be done without anyone knowing that you are doing them.

For the arms, chest and shoulders, the isometric exercises are good. By using your own muscle power or a stationary object, you can get your pulse rate up and offset the blahs at the same time. Muscle pressure against muscle pressure exercises are used



To improve circulation and alertness when forced to sit for long periods, raise your legs, tuck in your stomach and grip the bottom of your seat or arm rest. Hold the position at the "strain" point for the count, then repeat.

often by office workers that must sit at their desk for long hours. A few seconds of isometrics can relax, yet stimulate a person that must remain inactive, such as the desk worker. The desk can become a resistance object and help in your exercise program.

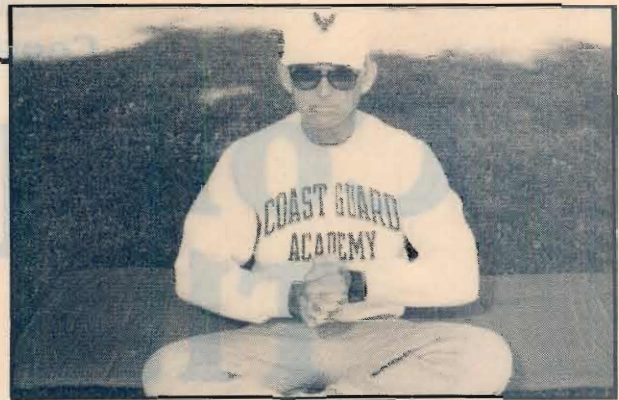
For the abdomen, arms, shoulders and lower back, you can hook your hands together at the fingers, keep your arms and elbows level in front of you and pull. Your pulls should be steady and firm, so that you feel the muscles strain. Firm up your stomach muscles and hold tight as you pull the hands against each other. Reach maximum point, hold for 10 seconds. Repeat at least three times, however five to 10 is better. If you have completed the exercise correctly and for a long period, your arms, shoulders and abdomen muscles should be fatigued and your face a little red.

Placing your knuckles against each other with your arms level in front of you and pressing right against left, etc., for a count of 10 and then repeat for three to five times, is another good method of giving your shoulders, arms

Isometric pushing or pulling of muscle against muscle is a program that can be done in or out of a tent or other confined space or while traveling in a vehicle.

and chest a workout.

Another good upper body stimulator is the seat pull. Sit straight with feet flat on the deck, grab the lower edges of your seat/chair and lift up as hard as you can. Hold maximum point for a count of 10 or so, then repeat for at least five times. This exercise is a real "red facer" if done correctly. If you want to do the seat pull in a tent or where there is no seat available, use a towel or strong belt. Sit on the towel or belt and try to lift your own weight. Also, I might warn you that this exercise, in particular, may cause a bit of embarrassment if you have a severe case of flatulence. Be careful.



Your local library or public gym can provide you with additional information on exercises that can be performed while traveling or just cooped-up somewhere. By having a good daily routine of exercises, you can be prepared to exercise while traveling without fear of soreness from overdoing.

Dress properly, watch your diet, reduce your smoking and exercise regularly. Meet that little criteria and you will be mentally alert and physically capable to perform 100 percent upon arrival of your destination or when you finally crawl out of the snow-laden tent. Alertness is one of the building stones of survival. ●

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Continuous Wave:

Conquering The Code

How you can master the mysterious Morse...

By J. Lincoln Thorner



Morse CW is hundreds of times more energy and range efficient than more complex modes of communication, such as FM voice.



This is the first of two articles on learning and using Morse code. In this article the author discusses how Morse code is often taught so that it is more difficult to learn. In the second article, to run in the October issue, the aural method of learning the code will be explored with tips for quicker learning — The editors.

MORSE CODE, nobody really still uses that stuff... do they? These days everybody uses teletype and TV or they just talk on the radio... don't they? Nope!

Morse communications remains both popular and useful. In fact, Morse remains the simplest, most efficient, and most dependable form of communications yet invented. In radio parlance Morse communications is referred to as CW (short for Continuous Wave). For the survivalist individual, and particularly for the survivalist group a knowledge of CW could prove vital.

Transmitters and receivers for CW are dramatically simpler than for newer, more sophisticated modes of communication such as Single Side

Band (SSB) voice, teletype, television... etc. They can be built much smaller, which means that they are more portable, and more hideable, if necessary.

A simple CW transmitter can be made out of only one or two transistors, which could be an important factor if radio supplies and technical help become scarce.

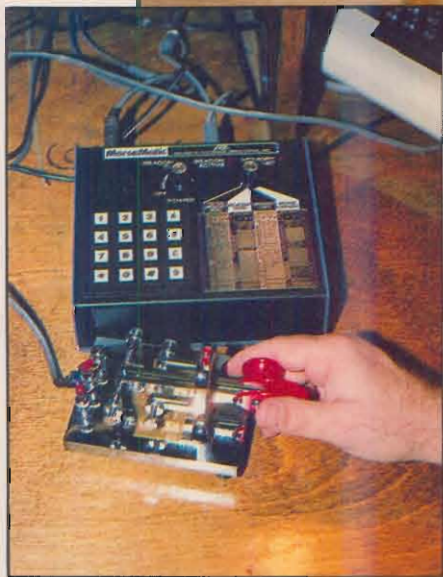
I have used a simple low powered CW transceiver to communicate effectively with other stations on the other side of the world using only one or two watts of power. Imagine what a two-watt light bulb would shine like and you get some idea of just how efficient a use of power that is!

Low power means that small batteries and even solar power on a small scale are effective. Because CW is simply a signal being turned on and off

in a series of Morse code characters, the receiving operator needs only to know that a signal is either present or absent. This is a tremendous advantage if the signals are weak or if there is interference of some kind. If you've ever tuned to a radio station that was too weak to understand, or a distant TV station who's picture was too snowy to identify what's being shown you've seen and heard two situations in which a CW signal would have been perfectly copiable at a tiny fraction of the power that the broadcast stations were using. CW can be copied reliably in situations of high static, interference from other stations, and atmospheric fading that nothing, I repeat *nothing* else could get through.

Studies indicate that static levels would be extremely high following the

Earphones are a big aid to concentration when picking up weak CW signals.



This modern computerized "keyer" by AEA enables an advanced operator to send perfect code almost effortlessly. Several models are available that will also memorize messages and generate random Morse code groups for copy practice.

detonation of the many nuclear bombs that would occur in a major war. Even under ordinary conditions, static, interference and fading can be fierce, and much military and maritime communication is still conducted in Morse. Listening in on this, incidentally, is not a bad way to follow what is going on. I've found that a lot of CW traffic

is in the clear, that is not encrypted.

Perhaps you've noticed in the movies about spies in World War II that their radio sets were invariably CW rigs. This is for the reasons I've outlined: small size, ease of maintenance, long range for low power, portability, and relative immunity to jamming and interference. They *did* have voice and radioteletype in those days folks, but under those circumstances they simply would not have gotten through with anything but code. Someday we too may find ourselves in a wartime or emergency situation where the same qualities in a radio would sure be handy. By the way, Morse is just fine for flashlight, mirror, or flag communications, as well as radio. You'd find it pretty tough to shout across, say, the Hudson river, but a pair of ordinary flashlights would make communicating a snap.

Learning Right — Learning Morse is not difficult. It requires very little in the way of intelligence, but rather is a reflexive skill similar in many ways to touch typing. This statement may be a relief to some of you, but many of you who share my three thumbled qualities of coordination may be groaning. For those poor souls who have

tried unsuccessfully in the past to master such skills as Morse code or typing let me say again; learning Morse code is not difficult.

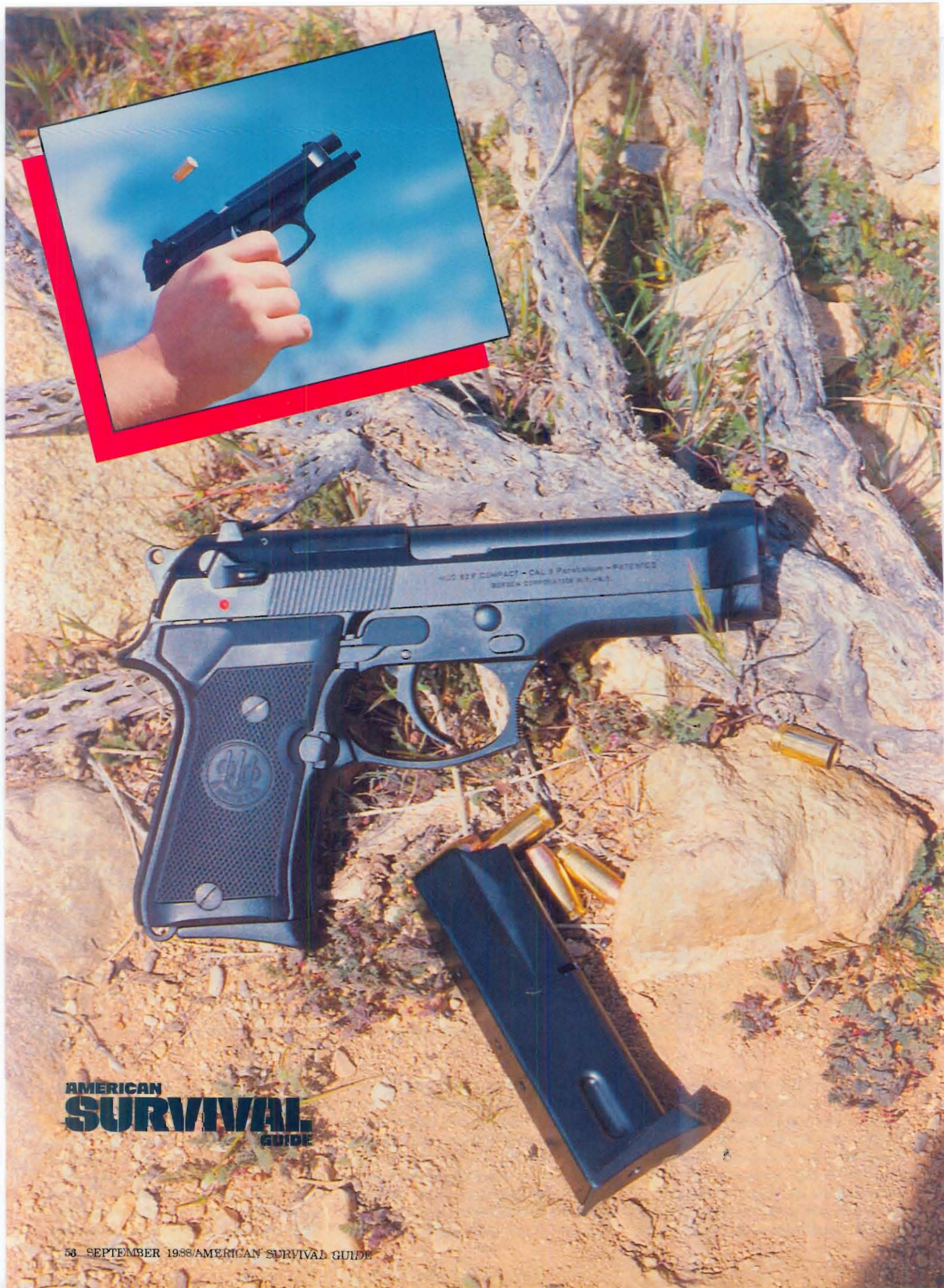
The trick, if it can be said to be a trick, is to learn it the right way, not the wrong way. Sounds silly, but you'd be astounded at the multitude of disastrously wrong ways there are to learn code. Some of them have even become enshrined as the "standard operating procedure" for such prestigious institutions as the Army Signal Corps and the Boy Scouts of America. The importance of *not* learning it the wrong way is such that I'll discuss that even before I tell you the right way.

I guess the simplest way of learning the code wrong is the one I picked for myself when I was 10 or 12 years old. This is the written method, in which you write down the letters and put little written dots and dashes next to them. Do this long enough and you will learn the code, in a way... a totally useless way.

It is unlikely that anyone will write you a letter with little dots and dashes on it, but if they do you're all set.

The point is that this method gives you an extra mental step to accomplish. First hear the sound (of the incoming

(Continued on page 62)



AMERICAN
SURVIVAL
GUIDE

Compact, Concealable:

Beretta 92F Compact

Cut down version of the new 9mm military pistol...

By Brian A. Felter

AS EVERYONE knows, Beretta's 92F is the "new" U.S. military 9mm Pistol. After years of testing, involving extensive sums of money and manpower, the Beretta 92F was selected due to its rugged design based on time and battle proven use.

The Model F's combat design did not just appear, but was developed over a 30-year period and six successive Beretta models. In its finalized form, the Model F has run the gamut from a proven design to a completely refined combat pistol... "reliability" being its middle name.

Once the full-sized military pistol was in production, a compact version was not far behind.

The original compact was a cut-down version of the Beretta 92SB, the immediate predecessor of the Model F. Reduced in overall height and length, it was attractive, but had a "bulky"



ABOVE — When field stripped, these are the basic components of the 92F Compact.

LEFT — In disassembling, you can hold the gun in your right hand, depress a disassembly button near the front of the trigger guard, then rotate the same lever on the left side, then slide the slide-barrel assembly off the frame.



feel with its wooden grips and less than appropriate magazine shoe. Initially designed as a compact version for Air Force pilots, its popularity spilled over into the civilian market along with its father the 92SB.

The basic reductions from the 92SB to the 92SB-C (Compact) were; 1) overall length reduced from 8.54" to 7.76"; 2) overall height reduced from 5.39"

92F Compact

to 5.07" and 3) barrel length reduced from 4.92" to 4.29". These reductions were carried over into the Model F Compact.

The finalized Model F completed the modifications on the 92SB and put the finishing touches on an excellent combat pistol. These final modifications mainly involved handling characteristics and durability. In all there are 12 modifications, with seven being readily apparent: 1) squared-off/contoured and longitudinal serrated front of the trigger guard; 2) curved-out bottom of the grip (at the front); 3) magazine well opening "beveled-out;" 4) enlarged magazine "shoe" (floorplate); 5) lanyard loop eye turned 90 degrees; 6) black, sand blasted plastic grips that have "scalloped-out" recesses on both sides below the safety levers, and 7) finish is a sand blasted blue with teflon coating. All of the 92F's modifications were carried-over into the 92F Compact.

Also note, the 92F Compact retains the lanyard loop eye at the rear of the magazine well opening. On the 92SB Compact, the lanyard loop eye was removed.

The Compact, with its overall reductions in bulk, is very handy to conceal. In a high riding belt holster it all but disappears. The smaller package



The thumb safety is high but still easy to reach and it's ambidextrous.

is quite a bit less noticeable under clothing, yet quick into action. Even though small, it holds 14 rounds of 9mm; with another magazine, a total of 27 rounds on the person. Concealable, quick into action and 27 rounds of 9mm... not a bad package.

A larger magazine well opening improves reloading. The curved-out area that encloses the bottom of the

magazine well opening (in the front) has been beveled and opened-up to allow easier insertion of the magazine. Hitting this larger area is quite a bit easier when reloading speed is a consideration. In conjunction, the enlarged magazine "shoe" gives a surer grip on the magazine when handling and inserting it into the magazine well.

The sights are strong, easy to pick-up and have a "dot and bar" system to aid aligning. The strength of the sights stems from two factors. First, the front sight is an integral part of the slide, being milled from it. This avoids possible front sight loss often encountered with conventional front sight mounting. Second, the rear sight is set in a dove tail cut into the top of the slide and is only adjustable for windage by drifting it in the dove tail.

The "square post" front sight and "square notch" rear sight are easy to pick-up when aligning. A good balance between sight height and sight picture produce a "low sight profile" that is snag free yet quick to pick-up. The small modification of slightly widening and lowering the "square notch" of the rear sight will effectively improve the sight picture. This modification opens-up the rear sight, which enables the shooter to take-in all of the front sight and focus on it.

The "dot and bar" are a real surprise when they're held under a light for a

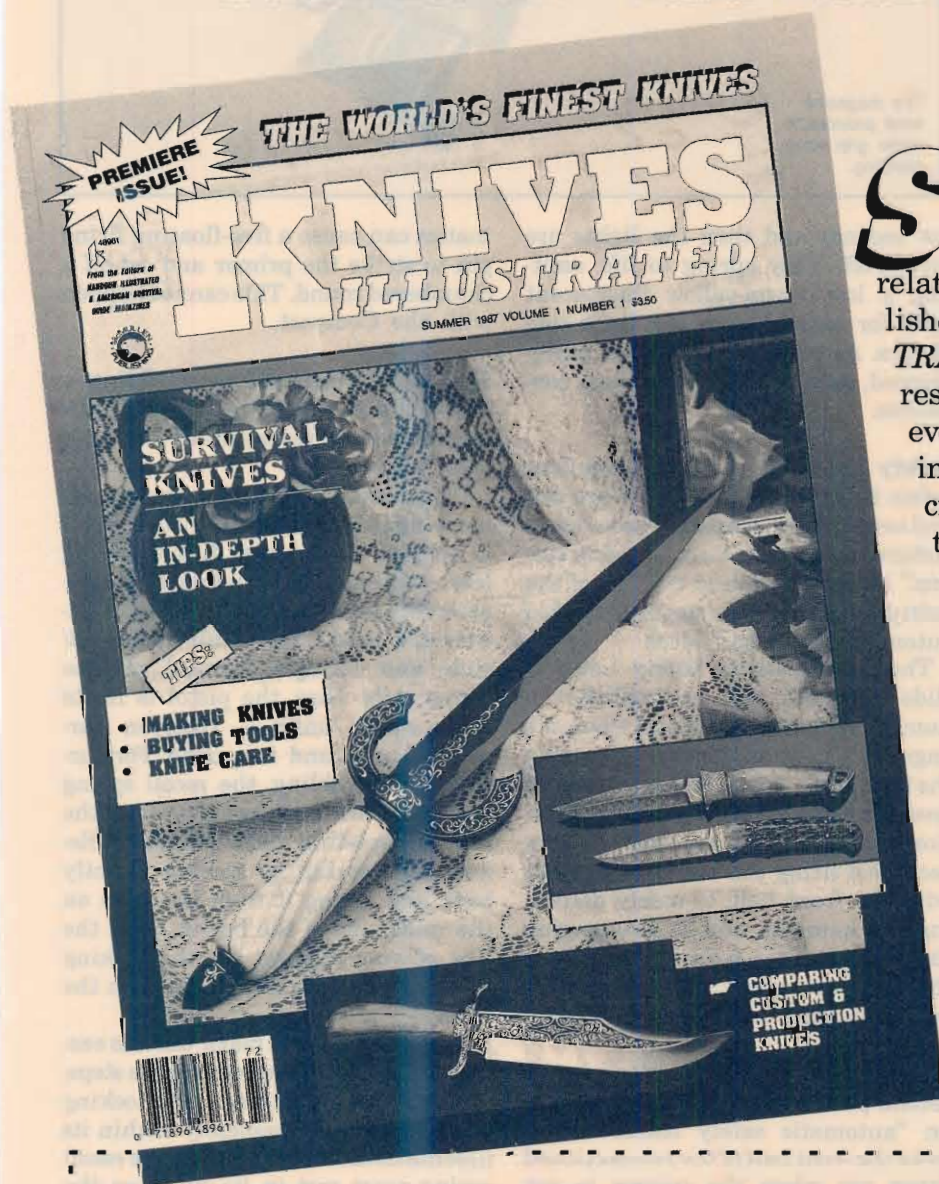
92F Compact: Tech Specs

	Model F	Model F Compact
Length	mm217 / 8.54"	mm197 / 7.76"
Height	mm137 / 5.39"	mm129 / 5.07"
Grip Width	mm35 / 1.37"	mm35 / 1.37"
Barrel Length	mm125 / 4.92"	mm109 / 4.29"
Overall Width	mm38 / 1.49"	mm38 / 1.49"
Sight Radius	mm155 / 6.10"	mm147 / 5.78"
Weight Approx.		
(Magazine Empty)	gr960 / 34.5 oz	gr900 / 31.2 oz
Magazine Capacity	15 rounds	13 rounds
	Staggered	Staggered
Frame	Light Alloy	(Same)
<i>(From this point on the specifications are the same for the Model F and the Model F Compact.)</i>		
Rifling	RH, 6 grooves	
Slide	Steel	
Front sight	Blade integral with slide fluorescent dot	
Caliber9mm Parabellum	
Type of action	semiautomatic, locked breech, delayed blowback	
Hammer	exposed with drop catch notch	
Trigger pull (Approx.)	SA - 8 lbs. / DA - 13.5 lbs.	
Safety features	1. Manual decocking lever which performs three functions 2. automatic firing pin block activated by the trigger 3. half-cock, drop-catch position of hammer.	
Manufacturer	Beretta U.S.A. Corp. 17601 Beretta Drive Accokeek, MD 20607	

Continued on page 60

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Beretta 92F Compact (Continued from page 58)



The magazine shoe provides a better grip when shooting.

few seconds and then the lights are turned-off. They spring to life, emitting a low, green-yellow fluorescent light for searching in low light conditions. As such, the sights are easily aligned, even during the darkest conditions.

Safety Features — All the excellent safety features of the Model F are carried over on the Compact. These safety features combine to form a "safety system" revolving around the use of the safety lever and the trigger activated automatic firing pin block.

The Ambidextrous Safety Lever is slide mounted and accomplishes a number of safety functions when it's engaged... dramatically increasing the Compact's safety. When this safety lever is engaged it performs three functions: 1) angling the rear half of a two-sectioned firing pin out of alignment with the front half, 2) safely decocking the hammer, and 3) disengaging the trigger. This safety lever allows the shooter complete safety when loading, unloading, handling and holstering.

The Automatic Firing Block is the second part of the safety system. It is an "automatic safety feature" that locks the front half of the two-sectioned firing pin when the trigger is not pulled back. The "block" is a small piece of metal (viewed on the top of the slide, just in front of the rear sight) that is pushed-up when the trigger is pulled to the rear — freeing the front half of the firing pin. This safety feature was mainly provided to prevent an unintentional discharge if the pistol should fall and strike the ground muzzle-down, which in some auto-

matics can cause a free-floating firing pin to strike the primer and set-off a chambered round. This cannot happen with the Compact.

Disassembling and Reassembling — The Compact is quickly and easily disassembled and reassembled for "user level" cleaning.

Disassembly: 1) engage safety, remove magazine and make sure pistol is empty; 2) depress disassembling latch button, hold it and push the disassembly latch down 90 degrees clockwise to a solid stop; 3) pull the barrel/slide unit straight forward, off the frame rails. Now, the pistol is in its three major units — receiver, barrel/slide unit and magazine. For further disassembling, the recoil spring and barrel are easily removed from the slide completing field stripping. Remove the spring by pulling slightly back and lifting it from its catch on the underside of the barrel, with the tips of your fingers lift the locking block and remove the barrel from the slide.

Assembly of these major units is easily accomplished by reversing the steps. It should be noted that, the locking block must rest completely within its indentations in the slide and the recoil spring must rest in its catch on the underside of the barrel, before the slide can be placed on the frame rails.

To conclude, this choice of Beretta's 92F has proved to be a very reliable, realistic, 9mm combat pistol. The Compact is an excellent cut down version of the 92F and retains all of its realistic capabilities... in a smaller, more concealable package, that handles well. ●

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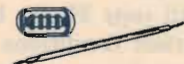
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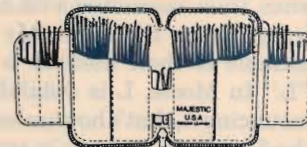
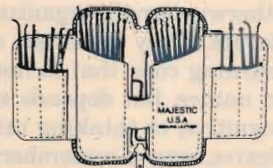
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Conquering The Code

(Continued from page 55)

CW signal), then translate that into a visual image of dots and dashes written on a page, then write down the correct letter.

No matter how practiced you are, this extra step takes a great deal of unnecessary time and will interfere with your ability to copy the next letter. Learning it this way also invariably causes you to memorize the code logically, that is counting the dots and dashes. In my opinion this, and any means of learning the code visually, will prove a handicap to completely mastering it. I taught it to myself the wrong way and it took me the better part of 10 years to work out the right way and get *really* good at it.

I recommend that you learn the code aurally (be ear) only. If you have a need to use flashing lights or flags later you'll have no problem. Perhaps it's the characteristically slower speed of visually sent code, but if you learn by ear, copying by eye is easy, but it just doesn't work the other way. For whatever reason it is, I recommend that you avoid any way of learning Morse that involves any visual stimulus at all.

My absolute prize for wrong-headed ways of learning Morse goes to an otherwise terrific organization: the Boy Scouts. They invented a method of learning code that is not only visual in nature, but depends strongly on a cognitive, or thinking rather than reflexive, way of remembering the code.

They use a sort of picture memory association system in which the code characters are first thought of as dots and dashes, then associated with a pictorial image using the letter. My favorite example of their method is the letter "L." In Morse, L is *didahdidit*. Try pronouncing it, that's how it sounds. What the Scouts do however is render it as . _ . . then note that a vertical line with one dot on top and two horizontally placed dots on the bottom looks kind of like a lighthouse, hence: "L." In order to remember what a letter is, one must go through several steps, at least one of them logical, that is, cognitive. The nearest thing I can think of as an analogy is trying to remember where the letter "P" is on a typewriter keyboard, thinking to yourself that Portland, Maine, is in the northeast so that the letter "P" is in

the upper right part . . . etc. You get the idea. Memory association is a dandy way to learn facts, names, formulae and such, but for reflexive skills like typing, karate, fencing, or Morse code copying it would only prove an asset on a written quiz.

In skills where stimulus response are required this just won't work.

I mentioned the Army Signal Corps in my cast of villains earlier. It really did effectively train thousands of highly skilled operators, as many, many veterans can attest. It did teach the code, and it used a great deal of repetitious actual copying to sharpen the skills of the men and women it trained.

There was one problem, though, that was so common among trainees that its fame is still among us. It was the so called "plateau." The plateau was a phenomenon in which the student would progress steadily from the two or three words per minute, that is what you can copy upon initially memorizing, to about 10 words per minute. At this point, the student usually found that he or she was stuck at 10 words per minute copying speed, no matter how much practice they put in. Eventually a breakthrough would occur and they would begin progressing upward in speed again.

What was happening was that the student learned the code one way, and that way didn't work above about 10 words per minute. By the way, the standard word is five letters, so that 10 words per minute copy would be hearing and writing or typing 50 letters per minute, or almost one letter every second. When the initial method of copying began to fail, as speed increased, he had to learn it all over again by a new method, one that worked above 10 words, or so, per minute.

If the code character is sent very slowly, that is each dit and dah is long and drawn out, it is almost impossible to keep from counting and ordering the dits and dahs, and thereby memorizing them cognitively as a series of sounds that must be counted and ordered in order to be understood.

In other words, if you hear "diiiiit daaaaaaaah diiiiit diiiiit" you would think to yourself that one dit, one dah followed by two dits, "ah, the letter L. Now this method beats the

heck out of writing down dots and dashes, or memorizing lighthouses, but most people can only use this method up to the 10 word per minute mark, at which time the characters are coming too fast for the dits and dahs to be counted.

At this point a new method of copying has to be developed. It is, in short, hearing the letter being sent as one sound rather than as a number of sounds requiring ordering and counting.

Each letter and number has a different and distinct sound and rhythm. It is almost impossible to hear this rhythm unless the character is sent rather quickly, say, over 10 words per minute (wpm).

The plateau in code speed progression experienced by the Signal Corps students was the period of time when they were relearning the code as a series of letter sounds instead of the series of ordered dits and dahs they had initially learned. It is interesting to note that many people find a similar plateau at 25 to 30 wpm. The transition here is going from copying letter sounds, to copying word sounds. My own top code speed was around 35 wpm, and I am sure that this would have been impossible if I had not understood a high percentage of what was being sent by the sound of the words rather than the individual letters. By the way, I once won a contest at a Ham convention by sending over 20 wpm with my left foot . . . no kidding! Better than twice what my runner up did . . . Won a clock, as I recall.

There are computer hardware/software accessories that will copy code. I've used several kinds. They are much more suitable for machine-to-machine codes like Baudot or ASCII, that is some form of teletype.

These devices will copy Morse, but require almost perfect conditions to function with even minimum accuracy. You have a built-in filter in your head that can be taught to copy code under the worst conditions of noise, interference and fading, and it gets better and better with practice. Under fairly good conditions I copy CW much more accurately than a computer code reader. Under really bad conditions it just won't be able to copy at all . . . but I will. ●

Wilderness Medicine

(Continued from page 47)

The six units consist of: the Topical Bandaging Unit, Non-Rx Oral Medication Unit (Rx stands for prescription), the Orthopedic Unit, Field Surgical Unit, Rx Oral/Topical Medication Unit, and the Rx Injectable Unit. As a minimum, the first two units will generally fulfill the majority of emergency treatment requirements. Their contents are outlined as follows:

Wilderness Expedition Medical Kit Topical Bandaging Unit

Quantity	Item
2 pkgs	Coverstrip Closures 1/4" x 3" 3/pkg
1 pkg	Coverstrip Closures 1/2" x 4" 6/pkg
6	Tagaderm 2 1/8" x 2 3/4"
2	Spenco 2nd Skin 3" x 13"
2	Spenco Adhesive Knit Bandage 5" x 6"
15 pkg	Nu-Gauze, high absorbent, 2 ply, 3" x 3" pkg/2
3	Surgipad, Sterile, 8" x 10"
2	Elastomull, Sterile Roller Gauze, 4" x 162"
2	Elastomull, Sterile Roller Gauze, 2 1/2" x 162"
25	Coverlet Bandage Strips 1" x 3"
1	Tape, Waterproof 1" x 5 YD
1	Tape, Hypoallergenic 1/2" x 10 YD
1	Hydrocortisone Cream .5 percent, 1 oz tube
1	Triple Antibiotic Ointment, 1 oz tube
1	Hibiclens Surgical Scrub, 4 oz bottle
1	Dibucaine Ointment 1 percent, 1 oz tube
1	Tetrahydrozoline Ophthalmic Drops, .05 percent
1	Miconazole Cream, 2 percent, 1/2 oz tube

Wilderness Expedition Medical Kit Non-Rx Oral Medication Unit

Quantity	Item
24	Actifed Tablets (decongestant)
24	Mobigesic Tablets (pain, fever, inflammation)
24	Meclizine 25 mg tab (nausea, motion sickness prevention)
24	Benadryl 25 mg cap (antihistamine)
10	Bisacodyl (constipation)
25	Diasorb (diarrhea)
25	Diulose (antacid)

Recommended Books:

US Army Special Forces Medical Handbook, by Glen K. Craig. Available through Paladin Press, P.O. Box 1307, Boulder, CO 80306; (303) 443-7250.

Triage, Emergency Care Handbook, by Max Klinghoffer, M.D., Technomic Publishing Company, Inc., 851 New Holland Ave., Box 3535, Lancaster, PA 17604.

Medicine for Mountaineering, edited by James A. Wilkerson, M.D., published by The Mountaineers, 306 Second Avenue West, Seattle, WA 98119.

Wilderness Medicine, by William Forgey, M.D., ICS Books, Inc., One Tower Plaza, Merrillville, IN 46410. •

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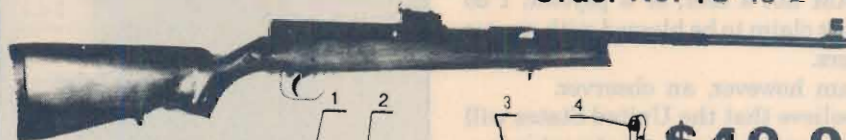
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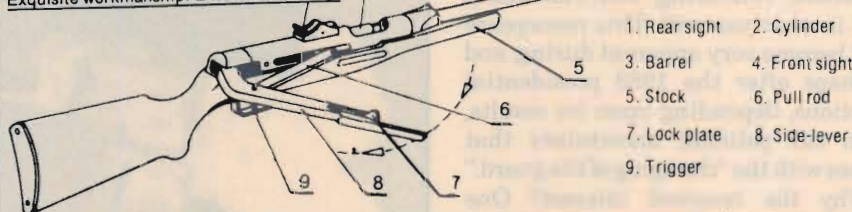
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The Survivalist, The Anti-Survivalist And The Future

The survivalist is a firm believer in civil defense. More than that he is a believer in surviving even if civil defense is neglected and should fail in a crisis. . .

By J. M. Philport

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I AM not a seer, or a psychic. I do not claim to be blessed with mystic powers.

I am however, an observer.

I believe that the United States will soon see a resurgence of interest in survivalism, retreating, self sufficiency, call it what you will. This resurgence will become very apparent during, and perhaps after the 1988 presidential elections, depending upon its results, with the political uncertainty that comes with the "changing of the guard."

Why the renewed interest? One merely has to take notice of the multitude of events that has taken place in recent years on the domestic and international fronts; Chernobyl, earthquakes, famine, the AIDS epidemic, the stock market crash and local bank failure, an influx of illegal aliens, increases in crime and terrorism, lowered educational standards, and a questionable INF Treaty that could, as "progress" is made, lead to an eventual

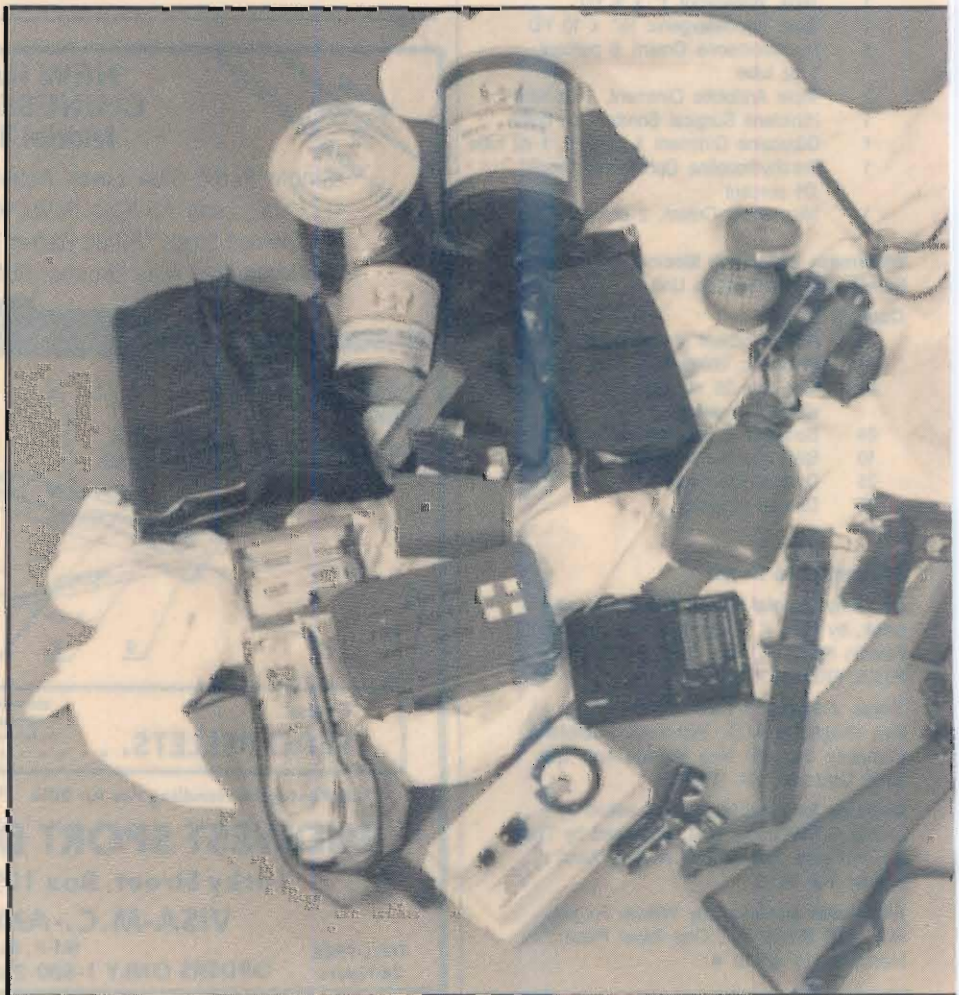
scrapping of the Strategic Defense Initiative.

But why go on? The list could be endless.

In short, things aren't getting any

better.

While some will renew and strengthen their survivalist outlook from the past, others will adopt it as a new philosophy for an uncertain and possibly



threatening future.

But with this will come a renewed effort to discredit the survivalist movement among the members of the media, liberal politicians, the anti-survivalist, and other "opinion molders" of our society.

They will say things, most of them ugly: that survivalists are a threat, representing what is really wrong with our society, frightened by nothing but shadows, coupled with a siege mentality that is un-American. They will point, without any justification, to a sociopath who goes berserk with a firearm, and say, "He was a survivalist!"

There have been a number of one-joke television programs and movies about survivalists that cast them in the worst possible light. The most well

known being *The Survivors*, in 1983, starring Robin Williams and Walter Matthau. The movie portrayed survivalists as buffoons, pseudo Rambos, or con artists.

Why? Why does this concept of individual disaster preparedness make such people insecure?

There are no answers.

To the dedicated Marxist, who HOPES for a *Red Dawn*, the survivalist represents the seeds of a resistance movement. Armed, with sophisticated communications gear, medical supplies and food stocks, they could wreak havoc to an invader.

To the liberal, it shows that middle-class America isn't really convinced that a Big Daddy/Big Brother Government can solve all of our economic and social problems, and in fact, is probably responsible for a myriad of them.

Some, otherwise responsible people, might themselves realize the dangers, having had a vision of an awful future, but like a deer caught in the headlights of an approaching car, are too frightened to move until it is too late. Or perhaps they fear that making preparations for themselves and their families will be the beginnings of a self-fulfilling prophecy, and feel safer sneering at those who make preparations, as Noah's neighbors must have surely mocked him.

Others will call food storage hoarding, a sinful exercise in selfishness. They are confusing storage, which is done in times of plenty, with actual hoarding, which is done in times of shortage.

While some religions believe in preparedness, others look upon it with disdain, believing God will supply all that the elect require during the Tribulations. I sincerely hope that belief is correct, but I was brought up to believe that God helps those who help themselves.

If a survivalist should build a fallout shelter, this in the eyes of the anti-survivalist classifies him as a "loony," as if he is personally provoking the Soviets into a nuclear showdown. "Besides," they will state, "scientific 'experts' say there is no hope of survival after a nuclear exchange, right?" Right, just like the best scientific minds of his day bled George Washington to death in an attempt to cure his head cold.

Another group of people have become so hypnotized by modern conveniences and gadgets that they can't picture a world without them, and would rather be dead, and want the rest of us to

join them.

Is this what America has come to in the last half of the Twentieth Century? "Gee, my electric toothbrush won't ever work again, please pass the cyanide."

It is an affront to the Spirit of Valley Forge, and to all the brave men and women who have laid down their lives for this country in the past two centuries. Is this what they died for, more Cabbage Patch Dolls, and a Michael Jackson Glove? Are we really, as a nation, descendants of such people, or just a pale impersonation?

I believe that we, as survivalists, are their spiritual progeny, the last of the rugged individualists, willing to at least try, even if we die in the attempt, not afraid to look into a dark future, and bring our own candles to light our way, not expecting someone else to do it for us.

If the ancestors of the anti-survivalists had their way we would still be Thirteen Colonies; after all, who would have been there to challenge the British Army on the way to Lexington and Concord?

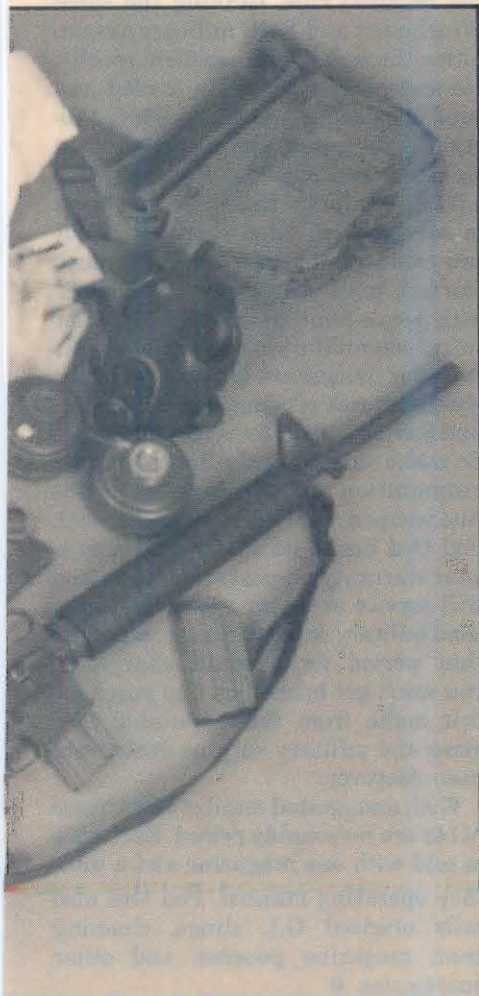
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And why would anyone in his right mind want to leave the comfort, safety and security of a Boston, Philadelphia or New York to face an unconquered frontier that was rife with challenge and hazards?

There is a distinct possibility that one day our Republic, this wonderful experiment in freedom and self government might fail, and fall, from forces within, or foreign powers. Or it might simply self-destruct, collapsing from the constant and tremendous burden of bearing the world's pressures and problems. America might cease to exist as a nation, or might simply be a shadow of its former self.

Survivalists might find themselves the sole keepers of its ideals, strengths, traditions, history and dreams, and perhaps the founders of a new beginning. ●

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Fed Ord M14SA Rifle

(Continued from page 10)



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the extractor, which is about 30 years old, had become weak and led to the malfunction, or it had not been assembled properly when mated with the new Fed Ord receiver. We later test fired the repaired rifle, running the same Winchester and PMC military ammunition through it with excellent results. However, when we again loaded and fired only one round of the PMC 150-grain soft points, the same problem occurred and we lost the extractor again. While in this case it was a minor problem that required about two minutes of repair work, we have learned from discussing the matter with people familiar with the M14 that using non-military specification ammunition is dangerous. Doing so puts the shooter at risk of being injured or killed and having his rifle severely damaged. So make sure you only fire the proper ammunition and nothing else in this fine weapon and it will serve you well. Fed Ord backs its M14s with a one-year warranty on parts and labor and will service or repair any of the many used military surplus guns it sells after that period for a small charge, so you won't get burned on any purchase you make from this reputable firearms and military surplus dealer and manufacturer.

With a suggested retail of \$629, these M14s are reasonably priced. Each rifle is sold with one magazine and a military operating manual. Fed Ord also sells original G.I. slings, cleaning gear, magazine pouches and other accessories. ●

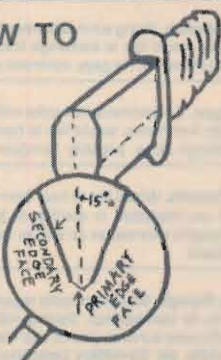
Books/Videos

(Continued from page 15)

refined and developed for centuries. Many of these weapons can reach speeds of 150 miles per hour and achieve an impact force of more than 1,600 pounds per square inch!

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How To Sharpen Your Knife, a video tape with "Nevada John" Seginski; \$19.95 plus \$1.53 postage and handling from TJE Video Productions, Dept. ASG, P.O. Box 50141, Reno, NV 89513; (702) 747-7914.

John Seginski decided to do this video when one day his hunting buddy related that each hunting season he paid to have someone sharpen his hunting knife. Most people don't know how to sharpen their knives properly, says Seginski. They blame the knife manufacturers instead of themselves for their dull blades. "I did my homework," Seginski states. He talked with cutlery shop owners, cooks, hunters and trappers and other people who work with knives regularly and read everything he could find about the subject of knife sharpening. Instruction includes secondary/primary edge face theory, honing the secondary edge face and primary edge face, testing an edge, discussion of use of sharpening stones, proper honing angle and other aspects of knife sharpening. Watch as Seginski puts a near razor edge on a dull hunting knife to illustrate his methods. ●

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THIS IS A CONFIDENTIAL listing of survivalists who wish to become known to others of like mind. *American Survival Guide* will accept properly coded mail and forward it to the coded addresses without charge. *American Survival Guide* accepts no responsibility for the contents or results of these confidential communications. Mass mailings are not permitted.

ASG 0900

Las Vegas, Nevada. A small group of self-reliant individuals with various skills would like to correspond with others in the southwest. We are interested in forming a weekend outdoor adventure group. Only intelligent, civilized Americans need respond.

ASG 0901

Gas City, Indiana. Married couple in early 30s with two daughters. Plan to relocate in Northwest Territory in near future. Desire to contact individuals or groups in this area. Have own survival equipment. Skills: Both nurses. Male: ex-airborne-Ranger, hunter, trapper, gardener. We are serious survivalists, but we don't want to go it alone. Interested parties and other survivalists please contact.

ASG 0902

Flagstaff, Arizona. Serious survivalist seeks others to join or form a group in central Arizona. U.S.A.F. security police vet. Medical / weapon / communications trained. No racists, Nazis, commies or Rambos.

ASG 0903

Northwest Arkansas. Recently purchased 20 beautiful acres of rolling hills and heavy timber with several large caves. Will be retiring later this year and plan on setting up a full-time retreat for myself and a place for 6 — 10 others to go on weekends or when the real thing happens. Looking for ex-military, medical, solar specialists and general handyman. Please no kooks.

ASG 0904

Northern Minnesota. Seeking contact with groups interested in survival to exchange ideas, knowledge, to become self sufficient, communications to protect our families, country. We won't make it alone.

ASG 0905

Victoria, Texas. Survivalist seeking contact with individuals or survival oriented groups within 100 mile radius, for the opportunity to join or establish this area. I am trained in N.B.C. and military aspects however prefer defensive actions rather than offensive tact. Willing to talk to anyone with reasonable intelligence who can exchange ideas or comments. Have my own gear and will travel if the need be, not expecting a free ride or want one.

ASG 0906

Indianapolis, Indiana. Backpacker survivalist seeking male and female financially secure survival types for correspondence, exchange of ideas, possible treks, with a view towards establishing a self-sufficient homestead retreat.

ASG 0907

Eastern, KY — Edgerton, OH — Dupont, IN. Two U.S. Marines have established paramilitary/survival groups in each location. Looking for members or groups in other locations. Getting out of the Marines in 1988 to devote more time to the group. Write for more info.

ASG 0908

Sylva, North Carolina. Combat — survival team expanding. Needs members for training which will begin soon. Serious persons only.

ASG 0909

Memphis, Tennessee. Serious survivalist with background in nuclear and chemical threats would like to join or start a survival group. Contact with intelligent, open-minded and self-reliant individuals welcomed.

ASG 0910

Great Falls, Montana. Patriotic citizens wanted to join paramilitary and civil defense oriented survival group. Motivation and dedication more important than experience. Send information on background and interests.

ASG 0911

Chattanooga, Tennessee. Long time survivalist family want to relocate with someone who has a farm, ranch, or large tract of land. Not looking for a job but a relationship to help each one to survive the bad times to come.

ASG 0912

Caribou, Maine. Survivalist planning to start group in northern Maine woods. I need info on everything needed to survive. Also need info from women survivalists.

ASG 0913

North Central Florida. Single, couples, or families. Give brief of capabilities and experience. Will reply to all.

ASG 0914

Houston, Texas. Survivalist would like to communicate with others of like mind nationwide and join a survivalist group in this area. I have seven years experience and a comprehensive knowledge of radiation controls. No racists, gays, communists or Rambos.

ASG 0915

McClure, Pennsylvania. Planning to start a survival group. Have land in Pennsylvania but willing to move to right spot. Also have need for a physically fit, well trained individual for business partner. No anti-Americans.

ASG 0916

Central middle west. Survivalist would like to meet others of like mind, and/or exchange information with other survivalists anywhere in the world. Am not bothered by the unusual or slightly off the wall views, am always willing to listen to other viewpoints.

ASG 0917

Saint John, Nebraska. Young survivalist wishes to contact others in the area. Also would like to exchange information with survivalists around the world. No gays, commies or racists wanted.

ASG 0918

Medford, Oregon. Environmental scientist with chemistry background, military experience, would like to hear from other survivalists. Exchange ideas, possibly form/join survival group.

ASG 0919

Carson City, Nevada. Would like to hear from other individuals in the area. I am interested in starting or joining a survival unit and exchanging information as well as training for various survival situations.

ASG 0920

Cobb County, Georgia. Small survivalist organization is accepting applications for membership. Training will include first-aid, urban and wilderness survival, search and rescue, combat tactics, outdoor skills, etc. Ex-military personnel and teachers of CPR, survival, or martial arts are most welcome. Membership is open to both female and male, novice and expert survivalist, all occupations and races. No communists, liberals, gays, racists or anti-Americans.

ASG 0921

Depew, New York. Survivalist seeking new members for self sufficient retreat on 56 acres of land in western New York area with much hunting and fishing. I have training in greenhouse gardening, retreat defenses, and NBC operations. Also seeking to exchange information with other survivalists within the U.S. All letters answered.

ASG 0922

St. Marys, Ohio. Family of three interested in survival and self sufficiency looking for survival organization nearby. Wife is elementary teacher. Husband is a paramedic.

ASG 0923

Fort Collins, Colorado. Survivalists here and in other parts of the world looking to exchange information, ideas, supplies, and equipment with others interested in preparing for a more secure future. Lets do it now while we have the opportunity.

ASG 0924

Windsor, Connecticut. Family seeks contact with other survival families interested in forming a Conn. and western Mass. network. Would like to have meetings to exchange ideas and information.

ASG 0925

Hertfordshire, England. English survivalist/local Civil Protection Coordinator would like to establish contacts with "safe" non-extremist American survivalists. Planning to come to U.S. in a few years and would like to get firearms experience from safe and reputable establishments/persons in this field. Interested females may write as well.

ASG 0926

Central Illinois. Experienced veteran. Not a right wing or a bleeding heart. Serious survivalist with much to offer. Will travel, relocate, or correspond.

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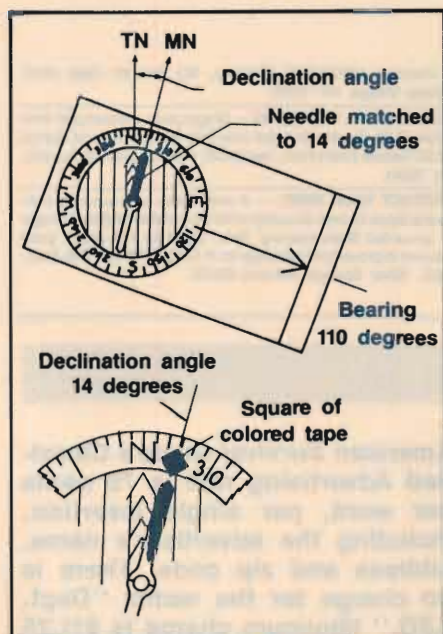
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Your letters will be forwarded to persons listed within two days of receipt. *American Survival Guide* accepts no responsibility for loss or delay of letters. Contact letters that do not carry the appropriate code number will be discarded.

Those who wish to be added to the directory listing, please send names and addresses to *American Survival Guide*, 2145 West La Palma Avenue, Anaheim, CA 92801. The listing is free. •

Land Navigation

Continued from page 34



Taking a bearing with a True North reference mark.

the map until the compass needle fits exactly inside the orienting arrow of the housing. Your map is now facing true north.

Once the map is oriented to true north, it is possible to study the terrain in front of you and begin to identify mountain peaks, valleys, and other landmarks. When you can translate the map symbols into real life terrain, you will be able to locate your general position on the map. To find your exact position, you'll need the help of your compass.

One of the most confusing aspects of map and compass work has to do with declination and converting magnetic compass bearings to true north bearings. Some of the more expensive compasses have an adjustment screw that permits the angle of declination degrees to be automatically corrected. Once you have entered your correction — say 5 degrees west on your dial, you can forget about declination when using a map and compass together — all bearings will be read as true north bearings.

Another way to solve the problem is to mark your compass with a piece of tape according to your area's declination. Instead of lining up the compass needle to the orienting arrow in the compass housing, you simply line up the needle to the tape and then read off the the index line the true north bearing.

Plotting your position — In order to find your exact location on a topographic map you need to be able to identify at least two landmarks in your surrounding area. Two mountain peaks will work great if you can positively identify them. Start by orienting the topo map using the compass and declination angle on the map's bottom margin. Take a true north bearing of the first landmark. Then without changing the bearing on the compass align the straight edge of the compass with the peak or landmark on the map. Draw a line along the straight edge through the landmark. Your position is somewhere along this line.

Now take a bearing of your second landmark and draw another line using your compass in the same way (it is still set for the second bearing) and draw a line through the second landmark. Where these two lines cross is your exact position. This process is called resectioning.

To confirm your results, find a third landmark and shoot a bearing again. The third line drawn through the third landmark should cross at the same point as the first two lines. This is called triangulation.

Dead Reckoning — When faced with very bad visibility an airplane pilot is forced to fly using only instruments to determine his position. A hiker can be found in the same situation when darkness, fog or snow makes it impossible to see surrounding features. For this reason many experienced outdoorsmen will take a bearing in the direction of that day's travel. With this information, it is possible to make it back to camp using the practice know as "dead reckoning."

In 1985, a party of mountain climbers were attempting to scale a peak in Zaskar, which is close to the Indian-Tibetan border. A storm hit without warning and with falling snow whipped up by high winds, visibility was reduced to only a few feet. Because of avalanche danger they abandoned their attempt to reach the summit and rappelled down the mountain face they had climbed. Once back on the ice plateau where they had left a high camp, the group discovered that their tracks had been erased by the drifting snow.

The alternatives the climbers faced

were not good. Without sleeping bags, and with limited warm clothing, bivouacking on the open glacier would be an impossible way to spend the evening. Wandering ahead, in an attempt to somehow stumble into camp, would be equally frightening. Somewhere to the left the ice plateau ended abruptly with a 2,000 foot drop off. If they managed to avoid the cliffs there was the complex crevasse system that lay just to the left of camp. Going too far to the right could mean walking for miles until finding another ridge towering on its far side. The climbers were cold, and they had no food, water or stove. With the snow flying so furiously, their field of view remained only a few feet.

This could have been a perfect time to panic, but they didn't. Before leaving camp that morning, they had taken a compass bearing to the ridge they intended to climb. Now, down off the ridge they took a "back bearing" by adding 180 degrees to the first bearing. With the man at the back of the rope holding the compass and calling "right" or "left," they set off into the white-out conditions. In an hour they were safely back to their tents.

Using a map and compass takes a little practice, but with a few practice sessions out in the field, you will develop more confidence in your ability to navigate the wilds by plotting safe routes, always knowing your exact position, and having the ability to find your way when conditions go bad. ●

Suggested books on land navigation:

Be Expert with Map and Compass, by Bjorn Kjellstrom. Orienting Services, USA, Dept. ASG, Box 1604, Binghamton, NY 13902

Orienteering, — Merit Badge pamphlet, Boy Scouts of America, Supply Division, 1930 N. Mannheim Road, Melrose Park, IL 60160-1064

Don't Get Lost, how to travel in the best circles in a square world. Department of the Army, Graphic Training Aid 5-2-13, available postpaid for \$7.75 through Sierra Supply, P.O. Box 1390, Durango, CO 81302; (303) 259-1822

Map Reading and Land Navigation. Department of the Army, Field Manual No. 21-26; \$10.95 postpaid from Sierra Supply, P.O. Box 1390, Durango, CO 81302; (303) 259-1822.

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MAIL CALL

Survival Groups

Have you ever considered running a section in your magazine concerning the doings of various survivalist groups around the country? It might be helpful to some fledgeling groups to hear what problems were encountered by more seasoned groups and how those problems were dealt with. I realize some individuals or groups might balk at sharing this information or see it as giving up some hard earned privacy, but others would probably welcome the chance to lend the "youngsters" a helping hand.

Jay Kirkman
Parkersburg, West Virginia

From time to time we run articles dealing with individual survival group activities which are submitted by freelance authors. However, most groups seem to value their privacy and have a desire to keep a low profile and they have little or no direct contact with us. We are always looking for such material and will continue to use it as we receive it.

Kitchen Medicine

I really liked the article "Kitchen Cupboard Medicine" in the March 1988 issue of ASG, I have a remedy to add. It's almost a sure-fire cure the common cold. You mix 50 percent myrrh gum powder and 50 percent golden seal powder and put the mixture in gelatin capsules. Take four to six capsules every four hours. You should start feeling better in one or two days. Be sure you use fresh herbs.

Don Baesimier
Tucson, Arizona

Thanks for the prescription.

SW Radios/New AKs

I read your article on shortwave listening (March 1988) and I thought your readers ought to be updated. The Sony Model ICF-2002 has been phased out of production in favor of the new ICF-2003 Model, though their top-of-the-line model is their long standing ICF-2010 Model. The most favorable prices on these and many other electronic items is the large mail order

and catalog sections in the back of magazines like *Popular Photography* and *Modern Photography*. Regarding your review of the Chinese type 56 AK assault rifles in the same issue, if you think the AKM type 56 series is great, wait till you see the new and amazing type 81 rifle developed by the Chinese. This is the new PRC Army issue weapon and it's a refinement of the old, reliable AK-47. It uses an AKM-style pinned and pressed sheet metal receiver design with a 2-lug rotating bolt, chrome lined bore, bolt and chamber. Caliber is 7.62 X 39 but the magazine does not interchange with the AK-47. It might be related to the Czech VZ58 magazine and incorporates a last round hold open retainer for the bolt. The new type 81's barrel is just about an inch longer than the type 56's barrel. There is also a heavy barreled SAW model which doubles as a heavy barrel fire support weapon. I think the PRC arsenals will probably make a 5.56 X 45 version of this weapon at some point.

Brian P. Dumas
Easton, Connecticut

Firearms Education

Would you consider publishing an article or two about guns that will give a survivalist who's totally ignorant about guns a simple education in them? I know absolutely nothing about guns except that you should keep them clean and that you pull the trigger to make the bullet go out the barrel. I would also like to know about cartridges. I want to know what is the best type of gun and ammunition for me to buy and use.

Albert Johnson
Morongo Valley, California
There are lots of books on firearms out there which will have plenty of information about what you want. Our advertisers carry many of these books. One you might find particularly helpful is Survival Guns by the late Mel Tappan, one of the leaders of the survival movement. This book is available from Survival Incorporated (SI), 18239 S. Figueroa St., Gardena, CA 90248; (213) 324-8855 or 59. •

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Fill out the accompanying coupon, and include payment with subscription orders or current subscription extensions. All ASG 1988 Giveaway No. 3 entries should be printed or typewritten on the official coupon, or a reasonable facsimile from this magazine. A facsimile entry is acceptable and valid, as long as it contains information required with the subscription or extension order/entry form. The ASG Giveaway is open to any resident of the United States. Federal law requires that only U.S. citizens are eligible to receive a firearm prize. The prize winner must not be legally restricted from receiving or possessing a firearm. This contest offer is void where prohibited by law. Employees of McMullen Publishing and its subsidiaries or subordinate agencies, and members of their immediate families, are not eligible to enter the contest. There is a **LIMIT OF ONE ENTRY PER PERSON** for this contest. Duplicate and/or multiple-copy entries,

when detected, will be disqualified and discarded. The prize winner will be selected in a random drawing of the coupons submitted for this contest. The drawing will be conducted at 2 p.m. Nov. 15, 1988. Entries received after Nov. 14, 1988 at 4 p.m. will be invalidated and discarded, though subscription orders will be honored by McMullen Publishing. The prize winner will be notified by telephone and/or mail within one week of the drawing. The firearm prize winner will be required to arrange with a local federally licensed firearms dealer to accept delivery of the prize. The winner will be required by the firearms dealer accepting the prize to fill out all necessary federal, state and/or local firearm purchase and/or transfer forms. To receive this prize, the winner must meet **ALL** federal, state and/or local requirements for firearms ownership. The winner must be 18 years of age or older. **NO EXCEPTIONS.**

PRIZE NO. 4



Survival Kit/Knife Sheath from Survival Line, Dept. ASG, P.O. Box 62054, Tucson, AZ 85734; (602) 883-4675. This camouflage nylon kit/sheath serves the dual purpose of being a handy, lightweight, portable survival kit and also a sturdy sheath for a variety of knives up to 13½ inches long. In its five compartments the sheath holds over 69 items, including a first aid kit, emergency survival handbook, signal mirror, fishing accessories, space blanket, compass, whetstone, tree saw, nails, 34-inch parachute cord, magnesium bar lighter, waterproof matches, match striker, sewing needles, thread, two desert solar water stills and a splint. The first aid kit contains 30 items useful to the wilderness traveler. Value is \$60.

PRIZE NO. 5



H2OK water filtration unit from Ready Reserve Foods, Dept. ASG, P.O. Box 697, Beaumont, CA 92223; (714) 845-6464. This portable water treatment system is easy to set up and use and utilizes activated carbon and silver to treat up to 2,000 gallons of water for drinking or other sanitary uses. Will serve the average family for up to three years. The unit is bacteriostatic and removes or reduces many organic chemicals, including industrial chemicals, pesticides and chlorine. Worth \$35.

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The recipient of this prize must be a citizen of the United States and must be 18 years or older. The recipient must be legally able to receive and possess this firearm. Proof of residency and age may be required.

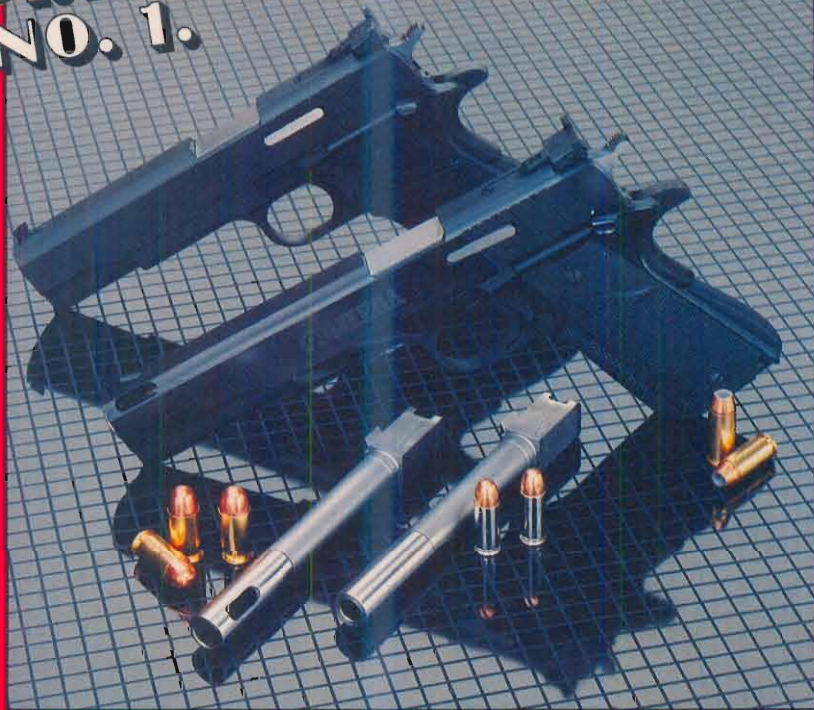
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PRIZE NO. 1.



Springfield Armory 10mm OMEGA Pistol. The new 5-inch barrel model of Springfield Armory's popular multi-caliber OMEGA pistol system. Like the extra-long 6-inch OMEGA originally offered by and still available from Springfield, the 5-inch model, shown here behind the 6-inch model, is available in three caliber choices: exciting new 10mm, .38 Super and .45ACP. The Giveaway prize will be 10mm only, but easy interchangeability of calibers can be had by purchasing .38 Super and .45 ACP barrels and recoil mechanisms, making the OMEGA the first practical multi-caliber pistol on the market. The 5-inch model was developed in response to requests from shooters who prefer the more conventional 5-inch length because of its adaptability to various add-on compensator units and to most standard pistol holsters. The 5-inch barrel is hammer forged and polygon rifled for maximum quality, accuracy and long life. The barrel is available with or without ports in all calibers. The prize gun has a ported barrel. Porting serves as a built-in compensator to reduce muzzle rise and recoil. Other features include a special lock-up system that eliminates normal barrel bushing and link found in most 1911-style pistols; patented dual extractor system allowing changing calibers without changing extractors; adjustable rear sight and interchangeable front sight; Pachmayr wraparound grips. A retail value of \$850. For more information contact Springfield Armory, Dept. ASG, 420 W. Main St., Geneseo, IL 61254; (309) 944-5631.

Kawasaki Ninja 700 one-touch start portable electric generator. Featuring super easy operation by just pushing the one-touch start button, the Ninja 700 puts out up to 700 watts of power on 120 V/60Hz AC or 12 V 8.5 A (102 watts) on DC for battery charging. It has a 2.5 liter (.66 U.S. gallon) fuel tank capacity. Engine is an air-cooled, four-stroke, 76cc (4.6 cubic inch) gasoline engine which will run about 3.8 hours on a full tank of gas. When the job is done, another touch of a button stops the engine and automatically reactivates the ignition system for instant restarts. No other generator in its class offers this kind of convenience. And none are as easy to use over the long run because a host of high-tech features like automatic choke and fuel valve systems eliminating controls to adjust during operation. The Ninja runs whisper quiet, with a tough, fully enclosed steel body and exclusive Uni-Flow cooling system ensuring that even 10 steps away the sound of the operational Ninja 700 is no louder than a normal conversation. It's so light (51.8 lbs.) and compact (20.1 x 10 x 15.3 inches) it will go just about anywhere you want to take it. The strong, built-in carry handle makes carrying it easy. U.S.F.S. approved spark arrester. There are also automatic circuit breakers on both AC and DC outlets and an oil alarm system which stops the engine and lights an indicator before oil level drops too low. Retail value: about \$550. Contact Kawasaki, Dept. ASG, 9950 Jeronimo Road, Irvine, CA 92718-2016; (714) 770-0400.

PRIZE NO. 2.



PRIZE NO. 3.



The Tomcat folding bowie knife from SOG Specialties, Dept. ASG P.O. Box 1006, Santa Monica, CA 90406; (213) 451-4292. All stain-resistant steel construction enhances this heritage-rich 3 1/4-inch bowie blade design with exact grind lines and superior cutting capabilities. SOG's negative-draft locking system prevents accidental folding of the blade. Grips are "point positive" Kraton for a firm hold. Overall length is 8 1/2 inches. The knife comes with lanyard and dual-mount nylon sheath. Value: \$80.

Federal Safety Requirements:

Nuclear Power Plants — How Secure Are They?

How likely is the possibility of terrorists, criminals or anti-nuclear fanatics taking over or sabotaging a nuclear plant? . . .

By Todd M. Stanford



ABOVE — A nuclear plant seen from the border of the restricted area around it.

LEFT — Amid the buildings of a nuclear plant are flood lights and television cameras for 24-hour surveillance by security personnel.

BOOKS, television, and movies have capitalized on the public's lack of knowledge concerning nuclear power plants to produce a myriad of scenarios involving terrorist attacks on such plants.

Perhaps it is time to take a look at the possible motives for such an attack and the security precautions required by the federal government to prevent it.

Each year, approximately one-quarter of the fuel in a nuclear reactor is removed. The uranium in the fuel has been depleted. This "spent fuel" is stored "on site" in a 40-foot deep pool of water known as the spent fuel pool. The 12-foot-long fuel rods used to generate steam in a nuclear power plant contain fuel pellets, each of which is about 3 percent fissile uranium. Sixty-

four rods are bundled together to form a fuel rod assembly. There are over 500 assemblies in each reactor. As the uranium is depleted it is transformed into plutonium, the stuff of which nuclear bombs are made. However, in a bomb the plutonium is enriched to a level of 99 percent, not 3 percent as in the spent fuel. This level of enrichment, as well as physical geometry, contributes to the impossibility of the spent fuel pool eventually becoming a giant nuclear bomb. The concern with spent fuel is that it will find its way into the hands of someone with the mechanical capabilities, know-how and desire to extract and concentrate the plutonium into weapons grade material.

Another concern is the takeover of a plant by terrorists who would hold

it for ransom. By threatening to disable the safety systems with explosives and thereby create a nuclear catastrophe, the terrorists could demand any amount of money.

Another very real concern is that some fringe anti-nuclear group would seek to intentionally damage the plant.

A nuclear plant is divided into three areas, for purposes of security.

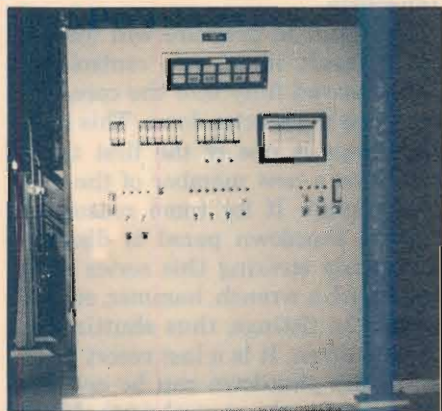
The RESTRICTED AREA — This area of the plant actually begins at the plant's property line. It is restricted in that it is private property and people within it can be asked to leave, and prosecuted for trespassing if they don't.

The PROTECTED AREA — This area of the plant is protected by a double, 10-foot-high cyclone fence topped with

barbed wire. The fences completely encircle the area. Between the two fences is open space, about 10 feet wide. This open area is monitored by at least two types of motion detectors. Infrared and ultrasonic, for example. Even a bird landing in this open area creates an unusual condition of plant operation, simply because it will set off an intrusion alarm which signifies a breach of security.

The VITAL AREAS — These are areas of the plant considered vital to the safe operation of the plant. They include the control room and reactor building, as well as certain other areas.

Entry — Vehicular traffic, such as delivery trucks enter the facility through a series of double gates in the fence.



The remote shutdown panel in a nuclear power plant.

The inner gate is not opened until the outer gate is closed behind the vehicle.

The same arrangement is used for deliveries by railroad. The vehicle is escorted throughout the plant. Speed is maintained at a walk. The fear of a suicide mission to ram a truck into one of the buildings is unfounded. The plant is designed to withstand a full speed crash of a jumbo jet with no compromise of structural integrity.

A person entering the plant must do so through one specific building. He first empties his pockets, then passes through a metal detector, similar to those found at airports. If the metal detector alarms sounds, a wand is then used to pinpoint the alarm source. In addition to surveying with the wand, the security guard then frisks the entrant. While this is being done by one guard, another searches any containers, such as purses, lunchboxes, etc. After the metal detector the person must pass through an explosives detector. Upon successfully passing these barriers, the entrant approaches another security checkpoint. Here he

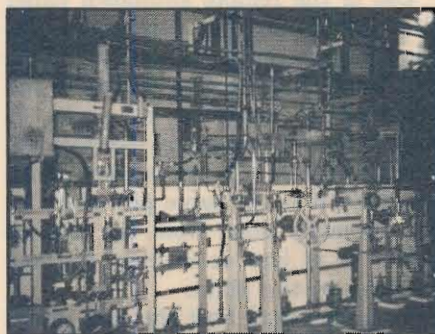
receives his identification badge. This is a photo ID attached to a coded magnetic card. The badge is requested by number. The photograph is compared with the person requesting it. If these match, the badge is issued and the person approaches the turnstile which blocks the actual entrance to the plant.

Placing the magnetic card into a "card reader," he then keys a multi-digit code number into the security computer via a keypad on the card reader. If all is correct, the computer allows entry through the turnstile.

There are at least two security computers in the plant; a main one and a redundant system. Not only entry onto the plant site, but entry into any vital area as well, is controlled by computer.

Two separate guards at two different consoles, one at the security center and one in the plant near the control room, keep watch over the computer. At any time the computer can report an individual's present location, as well as previously entered areas of the plant and how long he remained there.

The computer sounds the alarm if



Breaking a set of joints in this plumber's nightmare will instantly begin a shutdown of the reactor.

unauthorized entry is attempted and reports the location of the attempted infiltration. This is not limited to entry to the protected area. Should an individual attempt to enter a vital area for which he does not have prior clearance, even though he is permitted in the plant, the computer reacts as if he were attempting to cut his way through the fence.

These are also completely different computers than those used for monitoring plant operating conditions. These computers are dedicated solely to security related systems.

No matter what the weather conditions, day or night, everything within the protected area is bathed in light. Huge, halogen floodlights ensure that every square inch of the plant site is illuminated as brightly as it is at high

noon. Lights are changed after a period of time, before they burn out. Fluorescent tubes light the interior of the buildings on the site. Here too, there are no areas of the plant which are not as bright as daylight.

Every nook and cranny of the plant is under the scrutiny of independent television cameras with overlapping fields of view. Each camera has its own separate monitor, watched and controlled by security personnel.

A video recording system keeps a constant record of everything the cameras pick up. Each camera can automatically scan or be directed to a specific area. Field of view can be remotely adjusted to cover a very large area or focus in on an individual's face.

When the computer is told by one of its many sensors that a penetration attempt is in progress, a camera or two is directed at the specified area of the perimeter. Instantly a human makes the determination that this is either an assault or a stray bird.

There is essentially no activity that occurs within the confines of the double fence that is not observed, evaluated and recorded by someone or something, somewhere.

Security Personnel — Nuclear power plant security is provided by a contract security company.

One advantage for the security staff working at a nuclear plant is the fact that the federal government is much more actively involved in the nuclear industry than in other industries. As a result, there is strict compliance with labor laws.

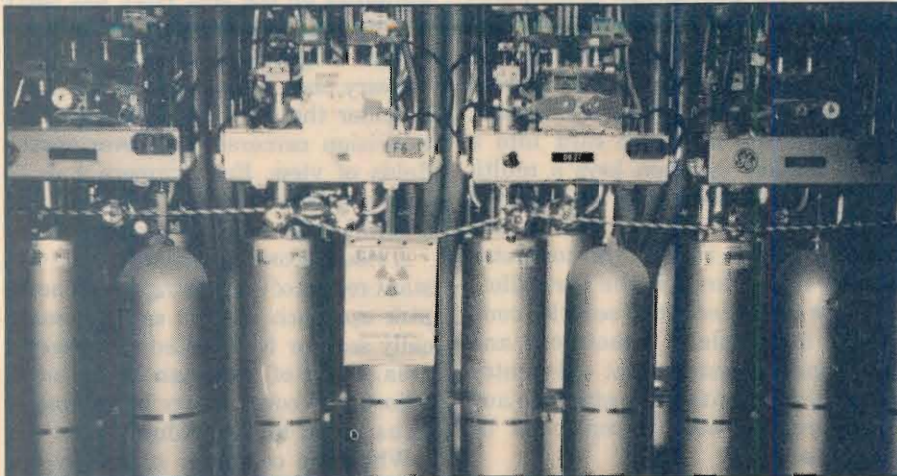
Certain assignments within the plant call for the guard to carry a firearm, others do not.

The armed security guards must requalify at least annually with the weapons at their disposal. The qualifications are stringent. The guard must score high on a combat shooting range. All guards must pass a regularly administered agility test to retain their jobs.

Prior to being granted entry to a nuclear plant all employees, guards included, must attend a "badging class" that teaches basic principles of radiation protection, measurements, and federal laws regarding nuclear work. They are also taught to "dress out" in anti-contamination clothing. At the end of the course, students must pass both a written and practical examination of the material covered.

Security personnel in a nuclear power plant patrol sensitive areas of the

Nuclear Power Plants



A nuclear reactor's hydraulic control units (one unit per control rod).

plant, on foot. They are also responsible for monitoring the security computers' consoles, and the surveillance equipment.

Guards are posted on the roofs of buildings, temporarily open access hatches throughout the plant, and other areas that can be considered risks to plant safety or security.

An armed guard stands watch from above and outside the control room. Positions such as this and the computer consoles often require the guards to be sealed into the room using a door which can only be opened from the inside or using the watch commander's key.

Their only contact with the outside is a sheet of bullet proof glass, their communications systems, and strategically placed gun slits.

Each guard is issued a walkie-talkie, and just like routine street patrol, must respond appropriately to time and communications checks. The plant also has, on site, a well equipped arms room. Here, under strict security, are automatic weapons, shotguns, handguns, protective masks and riot control agents, among other things. Not only is the amount and types of equipment amazing, but so is the fact that civilian security guards are well trained in their correct use, and quite capable of using them effectively.

If for some reason the control room becomes uninhabitable or should someone with the proper access become mentally unbalanced the reactor must be shut down. Provision has been made for this. In another area of the plant is a console known as the remote shutdown panel. It must be activated using

a key, stored separately. Another key opens the cabinet back, where SOPs, manuals, etc., relating to its use, are kept. After activating the panel, a reactor operator can safely shut the reactor down.

Use of the remote shutdown panel does not in any way sacrifice or jeopardize plant or public safety. It does not damage the reactor or any of the components, control or otherwise. It simply inserts the control rods into the reactor core to stop the nuclear chain reaction. It is the same procedure as is ordinarily done from the control room. It is just done from another location in the plant.

To understand how the last ditch, mechanical safeguard works, it is necessary to know a little something about nuclear power and how the reactor works. A nuclear chain reaction occurs when a neutron is absorbed by the nucleus of a uranium atom.

The absorbing nucleus then begins to fall apart, emitting 2.5 neutrons, which are then captured by still other nuclei and so on.

When the number of neutrons being emitted exactly equals the number of neutrons required to sustain this chain reaction, the reactor is said to be "critical."

Between the fuel bundles we mentioned earlier are control rods. These are rods of a non-fissile material which absorb neutrons. By absorbing neutrons, the control rods limit the number of neutrons available to sustain the chain reaction. Controlling the rate of reaction then is accomplished by physically inserting or removing control rods from the reactor core. The control rods are

moved by varying the hydraulic pressure within a hydraulic control unit (HCU). By decreasing the pressure on the reactor side of the unit, the rod is inserted. By increasing the pressure on the reactor side, the rod is withdrawn from the core.

There is a maze of plumbing that keeps all these pressures equal when control rod movement is not desired. There is one short (about 1 foot long) series of copper fittings midway between the HCUs located on each side of the reactor. If this series of fittings is damaged, it bleeds pressure off the reactor side of all the HCUs, simultaneously.

This shift in pressure will immediately result in all the control rods being moved fully into the core, thus shutting the reactor down. This series of fittings is one of the first things shown to a new member of the operations staff. If for some reason the remote shutdown panel is disabled, vigorously striking this series of fittings with a wrench, hammer, etc. will break the fittings, thus shutting the reactor down. It is a last resort assurance that shutdown can be achieved from outside the control room. It also ensures that the rods cannot be moved until a great deal of work is done to return the system to full operation.

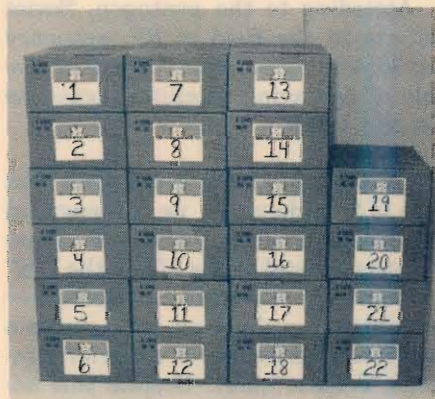
Bear in mind, these are not considered emergency systems as far as day-to-day plant operations are concerned. They are merely adjuncts to prevent a catastrophe should the security measures fail.

Fence, barbed wire, motion detectors, metal detectors, explosive detectors, television cameras, floodlights, magnetic card readers, photo IDs, computers, and armed guards. Most industries utilize a maximum of a combination of three of the above measures to insure security, and they have few problems. A nuclear power plant utilizes all of the above, with backup systems.

As almost anyone will admit, no amount of protection can keep an individual absolutely safe from assassination, if the assassin is willing to sacrifice his own life. So it is with a nuclear plant. No amount of security measures can absolutely prevent a breach of security.

But it would take a relatively large number of people willing to sacrifice their lives, and that's just to breach security. ●

Three Prizes: 1988 Giveaway No. 1 Winners



Food supply, knife, pistol...

THREE lucky people out of over 2,500 entrants won prizes in ASG's first giveaway for 1988.

G.D. Smyth of Tucson, Arizona, won first prize, the Survivors Pack, a year's supply of storage food from NITRO-PAK Storage Foods. The 22 cases of food have a retail value of \$1,365.

Pacita J. Ainsworth of Angwin, California, won the second prize, a Special Forces Vietnam Commemorative MAC/SOG Fighter Bowie knife, with a retail value of \$500. She plans to give the knife to her husband who is an avid reader of ASG and a knife collector.

Third prize went to an electronics instructor, Gary A. Carpenter, of Chester, West Virginia. He won the Mini-AT semiautomatic .22LR pistol from Feather Industries. Valued at over \$350, the prize includes four 20-round magazines, a scope mount and a padded black nylon carrying case.

Winners have been drawn for ASG's 1988 giveaway No. 2 and will be announced shortly. See details on Giveaway No. 3 in this issue on page 72. ●

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Soviet Star Wars

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have now been created. According to U.S. Air Force General John Piotrowski, head of the U.S. Space Command, lasers at Sary Shagan are now capable of destroying U.S. satellites up to 400 miles high and damaging those at up to 750 miles. Some in U.S. military circles think that the strategically vital U.S. early warning satellites which are in orbit 22,300 miles above the earth, may become vulnerable to Soviet ground based lasers in the next five years. There is also speculation that sometime in the early 1990s the Soviet Union might be able to launch a prototype laser weapon into orbit, either as a free standing weapon, or more likely, by placing it onboard the Soviet space station.

Such an occurrence would simultaneously jeopardize U.S. early warning and command and control satellites and serve as an effective BMD weapon. An even greater threat is posed if the system is of sufficiently high power to threaten ground-based targets.

A particle beam can best be described as a synthetic lightning bolt. Soviet scientists, have been working on a particle beam weapons system for some 20 years. Strangely enough, it was scientific literature published by Soviet scientists in the late 1960s, that gave U.S. researchers many of their basic ideas concerning particle beam weaponry. Not surprisingly, since those early reports the Soviets have clamped a tight lid of security on all matters dealing with particle beam research.

The Soviets have two test and development sites for particle beam research. One is at Sary Shagan and the other, their primary particle beam research facility, is at Surova, near Gorky.

It is difficult to know exactly how far Soviet particle beam research has come. Current CIA estimates place the Soviet particle beam effort equal to or slightly ahead of the U.S. program. Pentagon experts say the Soviets might have a deployable particle beam weapons system in the mid to late 1990s.

Research into the use of ultra high frequency (60 gigahertz or more) radio waves as weapons is a relatively recent development. According to experts the U.S. lags far behind the Soviets in such research.

RF (radio frequency) weapons work by scrambling electrical impulses in electronic equipment. Such weapons are, in effect, electromagnetic pulse (EMP)

guns. Just as the EMP produced by the detonation of a nuclear device can "fry" electronic circuits hundreds of miles away, so too can an RF "gun" have the same effect. An operational RF weapon could destroy the integrated circuits used in satellites, missiles, aircraft, tanks, radios, etc. RF weapons can also be used against personnel. At ranges of up to a kilometer or so an RF device could kill by disrupting the brain's electrical impulses causing the failure of the body's cardiac and respiratory systems. At longer ranges RF weapons have the potential of altering human mind functions.

According to the pentagon, Soviet efforts in the field of RF weaponry could yield a ground-based system capable of damaging satellites sometime in the 1990s.

"The Soviet Union is doing all that the U.S. is doing... we are engaged in research which relates to those aspects covered by the SDI in the U.S."

With those words Mikhail Gorbachev admitted for the first time, in late 1987, the existence of a Soviet strategic defense effort. Despite this admission Soviet propaganda continues its attempt to derail the U.S. SDI. Should that effort succeed the U.S. faces a grave threat to its national security. Regarding this possibility former Defense Secretary Caspar Weinberger has said, "I cannot envision any circumstances more threatening and dangerous for the free world than one in which our populations and military forces remain vulnerable to Soviet nuclear missiles while their population and military assets are immune to our retaliatory forces."

In the 18th and 19th centuries empires were built on seapower. Those nations which controlled the oceans flourished, those that did not withered and weakened.

Today's oceans are the heavens, and what was true two and three hundred years ago remains true today. Space, like it or not, is already militarized. The only question yet to be decided is whether or not the U.S. has the national will to pursue those programs necessary to insure her survival. The Soviet Union has clearly demonstrated that it has such a will. If we do not, then, like many once great nations, we too may find that history has passed us by. ●

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